JANUARY
1934

WORLD PETROLEUM

VOLUME V — Editor, E. W. Mayo — NUMBER 1

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Published Monthly by

RUSSELL PALMER

153 Waverly Place, New York, U. S. A.

Telephone: CHelsea 2—7398; Cable Address, Ruspam, New York

London: 3 Savoy Place, Victoria Embankment, W. C. 2

Telephone: Temple Bar 1735; Cable Address, Ruspam, London

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CALIFORNIA OFFICE: Bendix Bldg., Los Angeles.

Subscriptions

ANNUAL subscription to WORLD PETROLEUM is offered at the flat rate of five dollars (U. S.) postpaid to any country in the International Postal Union, except in Canada where a special tax compels the publisher to charge $5.60.

For the convenience of subscribers the publisher will accept payment in any of the following currencies at the fixed rate shown below:

Argentina	15 paper dollars
Canada	5.60 dollars
Colombia	7.25 peso
France	85 francs
Germany	14 Reichsmark
Great Britain	1 guinea
Holland	8 guilders
India	13 rupees
Iraq	1 guinea
Italy	60 lire
Japan	16 yen
Mexico	18 peso
Persia	1 guinea
Peru	23 sol
Poland	27 sloty
Roumania	5 lei
Russia	1 chervonets
Venezuela	20 Bolivar

Remittances or drafts to the order of the Publisher, WORLD PETROLEUM, payable in New York and London.

Subscriber's name and address should be in Roman capitals on the subscription order.

Official position of subscriber is requested.

Advance notice, if possible, of a change of subscriber's address should be given.

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CARACAS, VENEZUELA—Casa Letcher, Torres a Madrices 22
MARACAIBO, VENEZUELA—High Life Tailors
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NEW YORK—Telephone CHelsea 2-7398 for list of 20 newsstands carrying copies
PARIS—Librairie Brentano, 37 Avenue de l'Opéra
KOLN-LINDENTHAL, GERMANY—1 Laudahnstr: Director, A. J. Chambers
PORT OF SPAIN, TRINIDAD—Davidson & Todd, Ltd., 8 Frederick St.
LOS ANGELES—Bendix Bldg.

The price of a single copy is 55 cents in Canada, 2 shillings in other countries of the British Commonwealth and the equivalent of 50 cents (U. S.) elsewhere.

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Trail of the Completed Iraq Pipeline

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Progress Attained

IN SPITE of difficulties and inevitable differences of opinion certain definite progress has been made by the American oil industry since the inauguration of the existing scheme of control which went into operation in September last. Production of crude has been brought down by gradual stages close to the level accepted as economically justifiable. Runs to stills have been curtailed. The running of hot oil, produced in violation of state orders, has been greatly curbed though not wholly eliminated. East Texas remains a sore spot in the situation and marketing conditions for petroleum products are still in a very unsatisfactory state in various parts of the country. Crude prices, however, have been maintained at satisfactory levels and constant efforts are being made to stabilize the motor fuel market.

In dealing with a series of difficult conditions the Oil Administration at Washington, thus far, has given a fairly good account of itself. Secretary Ickes wisely has shaped his policy in accordance with the realities of each situation instead of attempting to follow a preconceived economic theory. He has declined to be stampeded in the matter of price fixing and, so far as possible, has sought to have the representatives of the oil industry settle among themselves issues on which a division of opinion has been found to exist.

It must be pointed out, however, that the objectives in view in attempting to codify the operations of the industry are not yet secure. While the majority of members of the industry are loyally supporting the Administration advantage will be taken in certain quarters of any sign of weakness in enforcing the regulation of production. Every time that output rises above the established allowable the report is circulated that control is breaking down and more recalcitrants are emboldened to try to beat the code. It must not be forgotten that the maintenance of equilibrium between supply and current demand is the foundation stone upon which this whole effort to maintain reasonable prices rests and that once that state of approximate balance is lost the entire structure will collapse. Stabilization of marketing practices is important but without stabilization of crude production it is impossible no matter what form of code may be adopted.

No scheme of regulation that can be devised is capable of giving universal satisfaction in its application to an industry comprising divergent and conflicting interests. In the case of the American petroleum industry, however, regulation as thus far developed has been of unquestioned benefit to producers and it offers at least a fair promise of eliminating flagrant evils in marketing practice.

In comparison with its situation a year ago the oil industry faces a much improved outlook. Not only is it measurably nearer the long sought goal of greater stability but the curve of consumption is rising and the demand for its products promises to increase during the coming year.

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Improved Outlook

WHILE the petroleum industry has faced difficult conditions and has been forced to wrestle with some serious problems during 1933 the results of the year's operations on the whole have been far more satisfactory than could have been anticipated a twelvemonth ago. In the United States the early months of the year were marked by the virtual breakdown of state control of production in Texas, by the rapid increase of illegal output and by demoralization of the price structure, both in the crude market and in that for finished products.

Low prices and the existence of distress stocks on the American side of the Atlantic were reflected in the European situation. Fairly stable conditions had been established there with Roumanian exports held in check and Russian competition becoming less aggressive. Increased shipments of low priced products from Gulf ports, however, presently forced a reduction in petrol prices in the British market. During the first half of the year the financial record of the industry was a disheartening one and many large producing and marketing organizations were forced to take tremendous losses.

While the first half of the year was a time of demoralization the second half has been a period of recuperation. In both instances developments within the United States were a principal factor.

With the enactment by Congress of the so-called recovery legislation, authorizing the establishment in industry of codes of fair competition, interest throughout the petroleum trade was centered upon the working out of this plan in relation to oil. Crude prices immediately strengthened but there was at the same time an acceleration of activity which led to an increase in stocks and a corresponding weakening of the statistical position.

In the three months during which the petroleum code was in process of formation crude production and refining operations both rose to the highest levels they had reached since 1929.

As a result of excessive output the motor fuel market was faced at the commencement of the period of regulation by large distressed or speculatively produced supplies which prevented the price of gasoline from advancing in proportion to the rise in the price of crude. This oversupply has remained an unsettling factor in the situation and has been responsible in part at least for the demand for price fixing. The question of how best to deal with it is still before the Oil Administration at Washington.

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Tax Struggles Are Looming

LIKE THE poor in the familiar Scriptural passage tax problems are something that the petroleum industry has always with it. Though it may be a hackneyed subject for discussion it is one that the oil interests cannot afford to neglect for a single moment. Tax hungry state legislatures are always ready to give an additional turn to the screws by which they extract public income from the motorists and the oil companies. Other organized interests, less concerned with revenue than with the possibility of stifling alleged competition, are constantly working to put legislative barriers in the way of the use of road transportation. The oil industry cannot afford to be less vigilant in meeting and repelling these attacks than are those who devise new burdens for the industry active in pushing their proposals.

This is the season of the year when state legislatures convene and face demands for additional revenue which all too often are solved by an increase in gasoline or motor registration taxes. This year the fact that the half-cent federal tax on motor fuel, which was imposed by Congress pending the repeal of prohibition, was discontinued on January 1 may suggest to state authorities the desirability of diverting this tax to state support. While the American Petroleum Industries Committee keeps a sharp eye on state ventures in this well-trodden field the Committee needs the active support and assistance of all members of the trade in order to get relief from the industry's present heavy burdens or at least to prevent their increase.

If unofficial reports from Washington are to be relied upon the motor fuel and motor transport industries will need to rally their forces to meet legislative proposals at the coming session of Congress that may seriously interfere with the normal development of highway and aerial transportation.

Heretofore the control of highway traffic has been left to the states but it is understood that the scheme for railway rehabilitation which Federal Director Eastman is expected to recommend will include provisions for federal regulation and taxation of motor busses, motor trucks, pipelines and possibly airplanes as a means of controlling their competition with rail lines. Without assuming that the railway rehabilitation plan will include provisions unfair to other transport agencies it is the part of prudence to be prepared to fight any one-sided legislative proposals that may be put forward.

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British Motor Taxes Opposed

SUPINENESS on the part of the petroleum and automotive trades toward the imposition of excessive taxation is so much the rule that when a healthy revolt occurs it is deserving of attention. Such a movement is now taking form among the members of the motor trade organization in Great Britain.

Certainly British motorists and motor manufacturers have abundant cause to complain of the disproportionate load they are called upon to carry in this matter of taxation. A direct annual tax of £1 per horsepower restricts the size of British motor cars while a tax of 8d. per Imperial gallon of motor fuel limits the use of cars. The annual tax on horsepower has caused English manufacturers to concentrate chiefly on small engined motor cars. Lacking a domestic demand for the heavy, powerful type of car popular in other countries the British motor industry is unable to reduce manufacture of this type machine to a basis of efficiency that will permit the industry to compete with non-British manufacturers in world markets. British motor car exports depend on an appeal to the desire for the novelty of small automobiles, or, in one conspicuous case, to the preeminent reputation of the manufacturer. This kind of tax hampers the manufacturer at home and practically excludes him from the export market.

A petrol tax on the high side of the point of diminishing returns leads to the laying up of approximately 250,000 motor cars in winter and restrains their free use at other seasons.

The Society of Motor Manufacturers and Traders is now completing plans to launch a campaign against these high taxes. Apparently, however, they have decided to concentrate their attack upon the horsepower tax on the motor cars themselves, leaving the high petrol tax unassailed on the assumption that if the petrol tax is lowered the oil companies will increase the cost of motor fuel. The S. M. M. T. apparently disregards the fact that the petroleum companies eventually will have to increase the price of motor fuel, despite the tax and even despite a possible loss of gallonage. They cannot continue to supply motor fuel at a loss for any considerable length of time.

It would seem that the opportunity exists here for effective team work between the motor industry and the companies supplying motor fuel to the British market. If the government were persuaded to lighten the burden of taxation on petrol, bringing it into at least approximate parity with the taxes on other commodities, the petroleum companies would be in a position to maintain prices at remunerative levels without imposing too great a burden on the motorists.

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Higher Duty Not Needed

WE HAVE the greatest regard for the ability and the high character of Mr. Wirt Franklin. His handling of the campaign for an import duty on crude oil and products showed good political generalship and he has placed the American petroleum industry greatly in his debt by the services rendered during the past year in helping to formulate the code of competition for the industry and to put it into successful operation.

We feel, however, that in urging a further increase in the oil tariff at this time Mr. Franklin is making a mistake. The depreciation of the dollar has automatically enhanced the degree of protection enjoyed by domestic producers of petroleum and is stimulating exports. Sentiment in other countries is particularly sensitive to American aggressiveness in attempting to buttress this country's international trade position. A policy of jamming on additional duties, whether in connection with oil or other important commodities, can hardly fail to invoke retaliatory action by which American trade would stand to lose much more than it can possibly gain by raising rates at this time. Statistics of import and export during the eighteen months since the existing duties were imposed show that there is no present danger of the United States being inundated by a flood of foreign oil. Avoidance of giving needless offence to other nations is a sound policy to follow in the existing state of international affairs.

Double Taxation Must Be Ended by Public

An Interview With Gen. Baird H. Markham, Chairman of the Petroleum Industries Committee in Which is Pointed Out the Part That the Industry Can Play in Combatting Excessive Taxation

QUESTION: The half cent federal tax expires January 1 and Congress reconvenes January 3, marking the beginning of a new period in the federal gasoline tax situation: should an effort be made at this time to effect the removal of the remaining one cent federal gasoline tax, or should this effort be concentrated on removing the larger burden of the state taxes?

Gen. Markham: A strong effort should be made to remove the remaining one cent federal tax on gasoline by means of an offensive campaign. Recently the demand for additional revenue in practically all the states has led to such a large number of proposed additional gasoline taxes that the American Petroleum Industries Committee has been forced to fight adverse legislation defensively. The federal gasoline tax was imposed to provide revenue to meet general expenses which is a violation of the true purpose of a gasoline tax. The emergency that made this tax necessary has passed. Revenue from income and liquor taxes is increasing. This is the logical time for the removal of this section of a double tax and to return the sole right to tax gasoline to the states.

Que.: Would it not be an advantage to retain a federal gasoline tax, even at a higher rate than that prevailing now, and remove the state taxes? The states could then receive a proportional share of the federal revenue from this source, and the country would enjoy the advantages of a uniform tax which would help to eliminate bootlegging, tax evasion and other evils that exist at present.

Gen. Markham: A uniform tax collected by the federal government and returned to the states would have been advantageous ten or more years ago. Now it would be impractical to attempt to shift the power of collecting this tax from the states to the federal government. Many states would have to revise their constitutions; all would be reluctant to give up their right to tax the motorist at the rate they deemed fit. A uniform gasoline tax, enacted by each state to correspond with the tax rate in all other states would be desirable in many respects, but the immediate task before the petroleum industry and the motorist is to reduce the gasoline tax in states where it is excessive, curb diversion of gasoline tax revenues and stamp out tax evasion.

Que.: If the federal tax were removed would not many states take advantage of such an occasion to increase the state gasoline tax by at least the amount of the federal tax?

Gen. Markham: No doubt they would; in fact, several states already have given consideration to bills increasing state gasoline taxes. They were introduced on the ground that the half cent federal tax was automatically eliminated on January 1 following the repeal of the prohibition amendment. This does not alter the fact that the federal gasoline tax is wrong in principle, not being levied for highway construction maintenance or improvement. The logical time for the removal of the federal tax has come, but if the states merely add this tax to their own, there will be no relief whatever for taxpayers.

Que.: What do you consider a fair average state tax on gasoline?

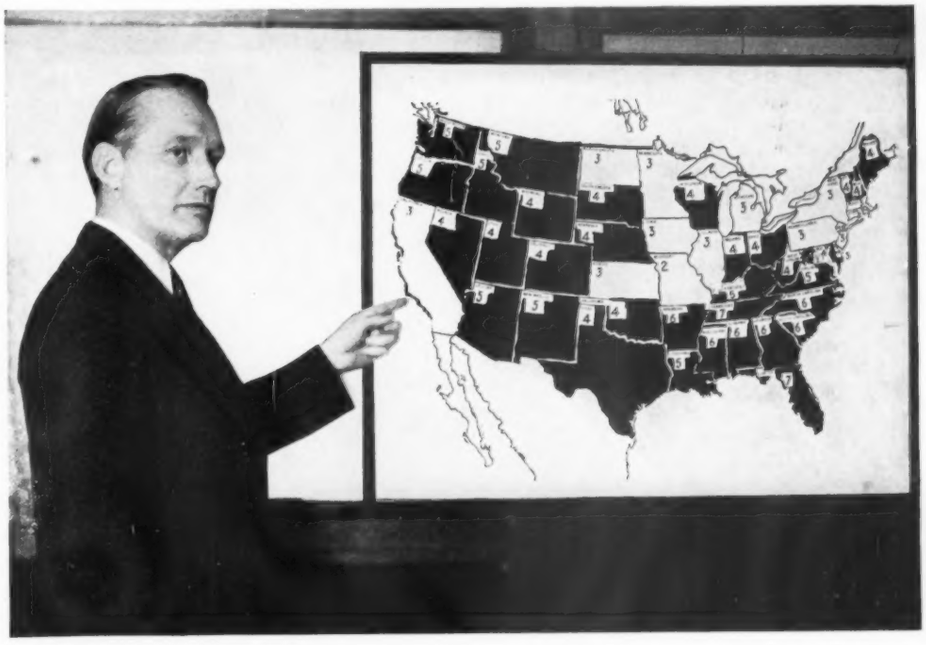
Gen. Markham: A tax large enough to provide sufficient revenue for a reasonable highway construction, improvement and maintenance program only. In general state gasoline tax rates above three cents per gallon may be considered too high. New York state, with a tax of three cents, is using one third of the revenue for other than highway purposes. Hence, the New York state gasoline tax is one cent too high.

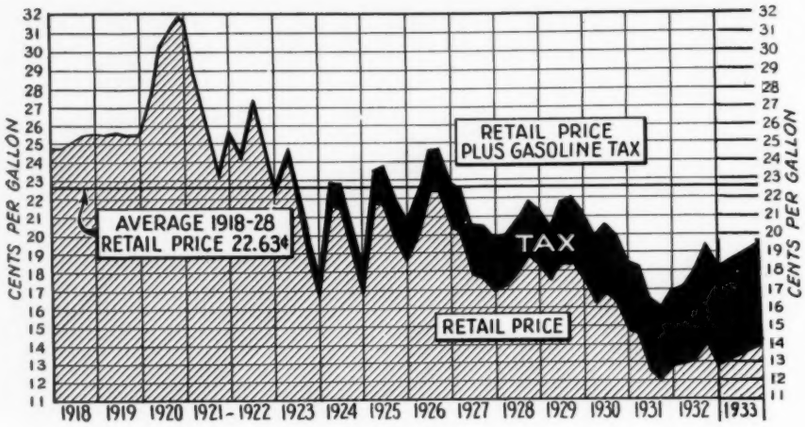
Que.: In many cases this diversion of gasoline tax revenue is for unemployment relief, is it not?

Gen. Markham: In some cases it is used for that purpose; although obviously one of the most effective forms of unemployment relief is an expanded highway construction program. States which already have completed their program of concrete express highways still have a vast amount of work to do in building the cheaper secondary highways and "farm-to-market" roads from materials locally available and designed for less traffic than the main highways. Highway construction programs based upon traffic surveys and properly conducted would help reduce unemployment and also aid materially in reducing the cost of transporting farm produce.

Que.: It has been suggested that the people who derive a direct and measurable profit from improvement or construction of highways are those who own property fronting on the highway itself and that these are the people who should bear the larger proportion of the cost. What is your opinion of this suggestion?

". . . In general gasoline tax rates above three cents per gallon may be considered too high"





Tax rates increase as gasoline prices are reduced

General Markham: I think the petroleum industry or the motorist do not object to paying a fair share of the cost of the highways. Gasoline taxes, however, could be materially reduced and still yield enough revenue for rational highway programs without burdening property owners. Diversion of highway tax money from its logical use, however, unbalances highway construction programs and financing. Again some states have collected sufficient money from the petroleum industry and the motorist to construct magnificent highways, but high gasoline taxes make it impossible to use them to any reasonable proportion of their capacity, so that actually at times more horse drawn vehicles and oxen are using the road than motor vehicles. Taxes paid by highway users will finance the highways, if permitted to do so thus reducing tax payments made by property owners.

Que.: What is the function of the American Petroleum Industries Committee in the fight against exorbitant gasoline taxation?

General Markham: The American Petroleum Industries Committee acts as a service organization in coordinating the activities of the various state committees organized to fight excessive taxation and inimical legislation in each state. It supplies information, programs and publicity material to the state committees, which are the direct action groups, in the state fights. The situation is reversed in combating federal legislation for the American Petroleum Industries Committee then is the direct action group and the state committees are the service organizations supplying material. We do not maintain a lobby in Washington. We attempt to defeat legislation by educating the public and arousing those adversely affected, in order to bring direct protests from interested individuals to the attention of the legislatures and of Congress.

Que.: Does the American Petroleum Industries Committee act against any other type of legislation than increased gasoline taxation?

General Markham: Plenty. The Committee handles the petroleum industry's war against all types of legislation inimical to the welfare of the industry as a whole. Recent examples include the restrictive legislation inspired by the railroads and designed to hamper the operation of commercial motor vehicles, thereby injuring one of the petroleum industry's best customers. Incidentally, there is every reason to believe that this attack will be vigorously renewed by the railroads during 1934. Another example is the proposed legislation to require the admixture to gasoline of alcohol produced from grain. This would curtail the amount of gasoline purchased and increase the price of motor fuel to the consumer.

". . . The motorist has only begun to feel the weight of the gasoline tax"

Que.: What can the petroleum industry actually do to assist in the campaign against exorbitant gasoline taxation?

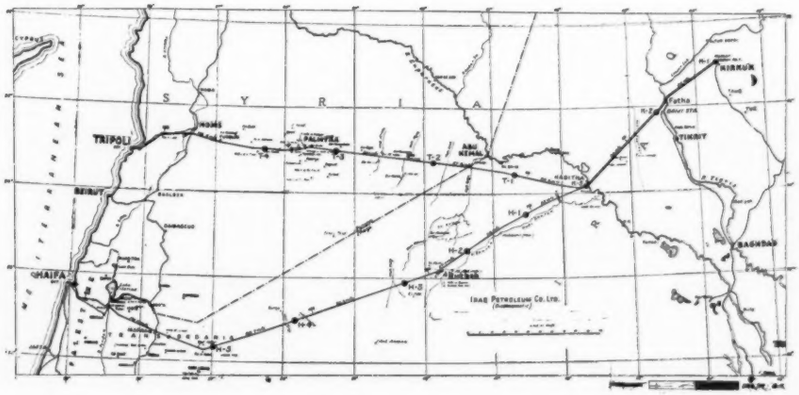
General Markham: The petroleum industry possesses the only actual point of contact with the motorist in its service stations. If the unfairness of the high gasoline taxation were brought home to the motorist at the time he made his purchase of gasoline he would resent more actively the attempts of state legislatures to increase this burden.

It is easy to imagine how much more strongly the motorist would feel if at every service station he purchased his gasoline and paid the attendent 70¢ or so for the commodity and then was stopped on the way out of the station by a second person who attempted to collect an additional 30 or 40¢ for state and federal taxes.

The petroleum industry can help also by educating the motorist by means of posters and announcements in the service stations and wherever else the industry has direct contact with the public.

The motorist has only begun to feel the weight of the gasoline tax because the price has been steadily declining while tax rates were increasing. He has been unable to enjoy the vast savings in the cost of motor fuel that the petroleum industry has made possible; but he hasn't realized this service because of the increasing tax burden.

It is absolutely necessary to educate the public to understand the part government is playing in increasing the cost of gasoline to the consumer.



Route of the Iraq Petroleum Company's pipe-line: double line extends from Kirkuk to Haditha where the line splits into two parts, one branch running to Tripoli and the other to Haifa. The line is completely laid and work is going forward on the pump stations, whose position is indicated on the map.

Iraq Pipeline Reaches Mediterranean

Overcoming Unique Difficulties in the Desert

The Iraq Petroleum Company Completes Laying of the 1,150 Mile Pipeline Months Before Schedule from Kirkuk to the Mediterranean

Ancient water wheel on the Oronto River, in Iraq; Photograph by M. Mercier, Secretary, Cie. Francaise de Petroles.

IN JUNE 1932 the task of stringing the world's longest desert pipeline was begun, and the first load of 12 in. pipe dropped on the desert sand. A vast amount of preparatory work, nevertheless, had been done before that time. The surveying of routes, arranging of transportation facilities, selection of camp sites and provision of food and water supplies had been going on for many months and—in the case of some of these activities—for several years before the first trench could be turned or the first length of pipe laid.

Careful planning and elaborate preparations were necessary to ensure that the enterprise was to be carried through successfully and in accordance with schedule. For this was no ordinary construction job. Pipelines have been built in many parts of the world where great natural obstacles had to be overcome. They have been carried over mountain ranges and through almost impenetrable tropical jungles. In certain respects, however, the running of a line from Kirkuk in eastern Iraq to the shores of the Mediterranean presented difficulties of its own, greater than any of these. Although, as a purely engineering problem the running of the line was comparatively simple it offered problems of other kinds which were without precedent. These arose from the character of the country which for most of the route was a barren desert, part of it across rock-strewn lava beds; from the lack of roads or other transportation facilities, lack of water on route, and distance from source of food and all other supplies and not least of all from climatic conditions. Sun temperatures rising to 150 deg. in the summer season with frequent blinding sand-storms make working conditions extremely trying to Europeans and Americans. For all these reasons the provision of an efficient system and organization for moving materials and supplies, and for meeting all possible contingencies that could be anticipated, assumed special importance.

In providing for this part of its task the Iraq Petroleum Company Ltd. has been in a fortunate position in being able to call upon the vast resources and experience of the great international organizations among whom its control is divided. Through their cooperation it was possible to recruit a strong organization of men who had had extensive personal knowledge of construction work in the United States, South America and the East. H. S. Austin, president of the Ajax Pipe Line Company in the U. S. A., was appointed Chief Engineer of Pipe Line Construction, having been loaned by the Standard Oil Company (N. J.). Owing to the roughness of the terrain over which it was necessary to move materials exacting tests were made of the transport equipment before its final selection. To enable the work to move forward from the focal points selected without loss of time contracts had to be placed well in advance and supplies accumulated at the various depots ready for distribution as needed. This work moved forward rapidly during the early months of 1932 and the various construction crews were assembled by the end of summer.

As a glance at the map will show, the Iraq pipeline consists of three main sections. First there is the double line extending from Kirkuk to Haditha, a distance of 165 miles, requiring 312 miles of 12 in. internal diameter seamless steel pipe. At Haditha the line forks. Its northerly branch proceeds a little north of due west passing through Syria to a point near Tripoli on the Mediterranean. The length of this section is 375 miles. The other branch dips to the southward from Haditha, passing through Rutbah in western Iraq, traversing Trans-Jordan and Palestine and ending at Haifa, a distance of 464 miles. The total distance traversed by the line, therefore, is 995 miles, but, as the Eastern section is double, its total length actually is 1,151 miles.

The area through which the pipeline extends is devoid of roads, in the western acceptance of the term, but it includes long stretches of loose sand, miles of basalt rocks, broken limestone, gypsum and churt boulders. Rainfall converts many sections of the area into an almost impassable quagmire at times during the winter while at other seasons drifting sand

View of the central and eastern portion of Haifa harbor with the proposed oil dock sketched in.

blown by the heavy winds that sweep across the desert make locomotion almost equally difficult.

In its course from Kirkuk to Haditha the double pipeline crosses the Tigris and Euphrates. As these river crossings offered special problems it was here that the initial operations in actual construction were begun. To transport pipe and other materials as well as lorries and general supplies across these rivers heavy wire ropeways, or blondins, were erected. Suspended from these steel aerial carriers thousands of tons of equipment were transferred from one bank to the other with speed and safety. The width of the Tigris crossing at normal flood times is about 1,500 ft. The total span of the ropeway is 1,985 ft. and carries a normal load of 3½ tons. The masts are 140 ft. high giving a minimum clearance of 80 ft. The hoisting and travelling speeds are 125 ft. a minute and 500 ft. a minute respectively.

At the Euphrates crossing the ropeway is 1,830 ft. and the masts are 130 ft., giving 80 ft. clearance. The normal load is five tons. On this river crossing both hoisting and travelling speeds are double that of the Tigris. In many instances fully loaded lorries were thus transported by means of these blondins.

A stupendous task in connection with the construction of the line was the transportation of the pipe itself from the water and rail terminals to the location where it was to be laid. With 123,000 tons of pipe required for the line and with hauls from railhead points running up to 250 miles the total volume of traffic assumed very large proportions. While pipe was the largest single item to be moved it was only one of many, including telephone and telegraph wires and poles; materials for the construction of stations; food, water and fuel supplies, and all kinds of material. In a recent estimate the total volume of this traffic was calculated at 23,000,000 ton-miles, equivalent to the movement of a caravan of 200 five-ton motor vehicles entirely around the world.

In view of the varied character of the surface over which this material had to be handled no one type of transport mechanism was capable of serving the entire territory. On soft surfaces, whether of sand or mud, where the ordinary motor vehicle carrying a load would simply dig itself in, tractors with self-laying treads were the only ones that could be continually relied upon. Several of these, including Trackson McCormick-Deering, Caterpillars, Atheys, Roadless and Allis-Chalmers, have been used and have met no combination of conditions that could halt them. On fairly level surfaces regulation type lorries have been found satisfactory, especially since they can make fairly good speed. A large fleet of these vehicles including Whites and Thornycrofts of ten to twenty tons capacity has been in continuous service. Four-Wheel Drive lorries have been employed in transport and general purpose work.

On the rough rock-strewn reaches of the lava country the Scammell lorries have proved particularly efficient because their articulation is such that they can clamber over heavy rocks and uneven surfaces without danger of overturning. A special type of lorry that has demonstrated its efficiency is the huge Marmon-Herrington combination unit which is capable of handling forty tons at a single load. The first of these transport units purchased by the Iraq Petroleum Company was looked upon as something of an experiment but the ease with which it handled enormous loads at low cost led to the placing of additional orders for three more similar machines. Then again there is a large fleet of International Harvester vehicles of lighter capacity.

Not only is tremendous power and adaptability to negotiate rough surfaces necessary in the cars used along the pipeline route, but the tires with which these cars are fitted must be of exceptionally strong construction. It has been surprising how the modern type of tires has stood up to the conditions and this is a great tribute to the manufacturers, such as Dunlop, Michelin, Firestone, India and Goodyear.

Once the stringing of the pipe along the route was accomplished the next task fell to the welding crews. The Iraq line is the longest welded pipeline ever built and its success is a triumph for this type of construction. The manipulators of the welding arcs are specialists in their particular line and are regarded with considerable awe by the native laborers to whom their operations are one of the many mysteries connected with an astonishing enterprise.

In preparation for welding, five 40 ft. lengths of pipe were laid on supports so that they could be turned around for making the weld, at the same time keeping them all on the same level. Each end of the pipe is belled, and before fitting together, each bell fits over one-half of a chill ring. This prevents obstruction within the pipe from lags of metal projecting as a result of the welding process, and leaves an unobstructed flow for the oil. Lincoln Electric and Wilson welders were the machines used in the welding work.

When the 200 ft. length was welded it was tied on to the line. Its union with the line is somewhat more difficult than welding the shorter lengths, as it must be done after the pipe is placed directly above the trench. The welder has to work his way round the pipe and weld from below as well as on top. To enable him to reach the lower side the trench was made slightly wider at this point and he takes up a position in the trench.

After the welding was completed the pipe was cleaned by means of a WKM self-

Camp of the No. 4 gang near the Homs' d

Welding sets for the great pipeline being hauled through rough country by Trackson McCormick-Deering crawler tractors.

propelling pipe cleaner, which fitted around it and by a series of rotating wire brushes removed every trace of dirt, leaving the surface clean and ready for the first coat of bitumastic primer, of which 80,000 gallons were needed.

After the coat of priming had dried, enamel was applied and then the pipe was wrapped. All this is to protect it against corrosion. No fewer than 6,100 tons of enamel were used on the line.

This enamel is a bituminous preparation which was heated in "tar babies" and poured on the top surface of the pipe from ladles. As it flowed around the pipe a strip of canvas extending underneath was worked back and forth by men holding its opposite ends to insure an even coating. Before the enamelling was done a continuous roll of 12 in. wide asbestos felt wrapping was applied spirally to the pipe, completely enveloping it in a solid moisture-proof covering. Special machines were used for this purpose, developed by Johns Manville Company, and Ruberoid Ltd., who also manufactured the wrapping, of which 150,000 rolls, each 150 ft.

Lowering the line into the trench using a boom attached to Trackson McCormick-Deering tractor. Stony soil here made particularly difficult the task of digging a trench for the line.

tions. This was a phase of the work that appealed especially to the native laborers who showed considerable aptitude for it and always were keenly interested when a heavy blast was set off. These were somewhat spectacular affairs, for in places where solid rock was met with the practice was to drill a series of 100 to 300 holes with the compressed air drills employed for this purpose and to set off this number of shots at one time. On one occasion when the Emir Abdulla of Transjordan visited a section of the route in that country a creeping barrage of 2,500 shots was fired giving a vivid impression of a renewal of the world war. It is estimated that a total quantity of 200–300 tons of explosive has been delivered in the field for use along the line.

...ing the men who worked on the Iraq pipeline.

long, were used to cover the 1150 mile line.

With this treatment the pipe was ready to be placed in the trench which is of an average depth of three feet. In excavating the trench through ordinary soil or in fact wherever solid rock does not exist Buckeye trench diggers of the type widely employed in American pipeline construction were used. An accompanying illustration shows one of these machines at work and indicates its method of operation. Under ordinary conditions these machines excavate about a mile of trench per day. Where large rocks were encountered projecting above the bottom level of the trench the machine was lifted, and travelled over them and they were left for later attention from the blasting crew.

On certain sections of the route solid rock ledges had to be cut through and this called for more extensive blasting opera-

After the blasting crew had done its work another gang of native laborers followed, chipping off and smoothing the rough sides and bottom of the trench which was then ready to receive the pipe.

In the process of laying and covering the pipe the continuous tread tractors found a chance to demonstrate their usefulness and labor saving abilities. These machines, fitted with side booms or rear booms (or cranes) of special WKM design lifted the long sections of welded pipe and placed them in position directly above the open trench where they were supported on skids placed about 70 yds. apart. The weight of the pipe caused the middle sections to sag into the trench, but this was all a part of the plan of procedure as it is desirable to have the pipe slightly longer than the trench so that when the sections are joined they will meet under compression and not under tension. If the sections were laid so that the ends merely met each other the contraction of the metal under a sharp drop in temperature might pull the line apart. This matter of temperature changes is one that is especially important in a country with a hot climate like that of Iraq and in the summer season when the midday heat was extremely high the work was so arranged that, so far as possible, the pipe was laid in the trenches during the early morning hours, the coolest period of the day.

The job of back-filling, or covering the pipe with the earth that had been excavated and thrown out along the line by the trench digging machines, was another that was performed by the track-laying tractors by means of a scoop attached to a jib arm. The scoop was manipulated by lines from the machine and as the jib swung back and forth, it dumped a load of earth into the excavation at each movement and filled it in less time than twenty men by hand methods.

The tractors also were employed in bending the line where it was made necessary to conform to a change in the direction of the trench or by a sharp rise or fall in grade. While one set of tractors held the line or pulled in one direction another set pulled the opposite way until the right amount of bend had been obtained.

This is a rough outline of the general method followed in placing the pipeline in its permanent position. Certain segments of the route presented special problems and required more than the average amount of hand labor. An interesting

portion of the line is the section extending across the Jordan Valley which makes a sharp descent from the east to a point 800 ft. below sea level and then climbs as abruptly upward to continue its course to the sea. On this section the size of the pipe was reduced from 12 in. internal diameter down to 8 in.

No compilation of statistics can give an adequate impression of the expenditure of human energies that has gone into the building of this desert pipeline. It is an epic story of lorry drivers who have guided their loads of materials and supplies across the desert in the face of blinding sandstorms which have made it impossible to see beyond their radiator caps; of the members of the construction crews who have kept the work going through blistering heat and chilling storms, and so on up to the directing officers who have deployed the forces of men and machinery so as to make sure that equipment and supplies would be at the points where they were needed when they were needed and who have kept the many activities included in the whole project moving steadily forward in unison toward a completed whole. When the history of the Iraq pipeline comes to be written it will record not only a triumph of mechanical ingenuity, but a demonstration of scientific planning and of steadfast devotion to duty that has extended to all members of the organization from the highest executives to the most lowly worker.

While the actual laying of the pipeline was, of course, the task to which all other activities were subsidiary many of these complementary operations would rank as enterprises of the first importance if considered by themselves. For example, in order to provide constant and reliable communication along the pipeline route, it was necessary to construct a complete telephone and telegraph system. The erection of the communication line was begun in September 1932 and was completed in April 1933. It has since been kept very busy. The wire, metal posts, cross-arms and other equipment had to be transported by lorries and tractors and delivered along the route much in the same manner as the pipe. Buda mechanical post-hole diggers were employed for digging the holes in which the poles were set and the construction crew of 45 men was able to string an average of one mile of wire daily in the initial stages and subsequently exceeded this record. Two lines of wire are carried, giving local and through telephone and telegraph circuits. In addition to these land lines seven radio telegraph and telephone stations have been established at points along the route.

Buckeye ditcher eating through a mile a day of Iraq soil preparatory to laying the pipeline.

Another important collateral activity was the provision of a water supply. While there were a few wells at points along the route which had served desert caravans for hundreds of years these were not sufficient to meet the needs of an undertaking such as the building of a thousand mile pipeline. To supply the deficiency a large number of wells were drilled by portable cable-tool outfits which were carried on five-ton lorries and it is interesting to note that in nearly all cases water was found and in some cases an abundant flow was encountered at depths of from 300 to 600 ft. Where wells have proved insufficient, special water lines have been laid from the rivers and other main sources of supply.

With 10,000 to 17,000 laborers employed in the construction of the pipeline the organization and operation of the commissary department was comparable to that of an army in the field. It involved the provision and transportation of large quantities of foodstuffs over long distances to the twenty different camps maintained along the pipeline route, the setting up and equipment of kitchens and mess tents. Special study has been given to supplying the kinds of food best suited to the prevailing climatic and working conditions. Its quality is attested by the fact that native laborers showed an immediate gain in health and working efficiency after joining the company's service, a change which can be attributed largely to the advance in the standard of living over that to which they had been accustomed.

Sanitation naturally played an important part in the successful carrying out of this big construction project. Sanitary standards being what they are in the East, the task of the medical division has been no light one. Its members have been able, however, to instill acceptance of the rudiments of personal hygiene into the native camps. Daily inspection of food, water and kitchen arrangements was part of the routine and in addition each new applicant for work underwent a physical examination before acceptance in the company's service. Bacterol disinfectors were used throughout the camps periodically and vaccination and inoculation were resorted to when epidemics threatened. Quarantine regulations were strictly enforced. Hospitals are maintained at major points along the route, including Baiji, Haditha, Mafrak and Homs, and health conditions on the whole have been excellent. There are seven motor ambulances attached to the hospitals and a complete dental clinic. The number of accidents during construction work has been conspicuously low, especially in view of the type of labor employed.

In order to move the 85,000 bbl. of oil which the Iraq pipeline is designed to handle daily—although full capacity of course will not be reached immediately on its opening—twelve pumping stations are

To protect the pipeline from corrosion: on the right the pipe is covered with enamel; further left a native is walking backward on the pipe covering it with hot enamel; while on the left workmen are wrapping the line with bitumen treated paper.

Natives of the desert took a keen interest in the welding apparatus which joined the 1150 mile Iraq pipeline together.

to be located along the line. Three of these which are double stations are on the double section of the line between Kirkuk and Haditha, four are on the northern branch extending through Syria, and five are on the southerly line running to Haifa. The location of these stations is shown on the accompanying map.

The station buildings which are to house these pumping plants are now in course of erection and most of them are nearing completion. The pumps and engines are being shipped by the various manufacturers and will all be in position by the time the line itself is ready to begin receiving oil at Kirkuk.

The equipment selected for the pumping operation is of the horizontal, duplex, double-acting type. There are 45 of these pumps. They are driven by Diesel engines through single reduction helical gears and flexible couplings, and will deliver against a line pressure of 800 lb. per sq. in. with a capacity of 21,500 bbl. per day each. They are being manufactured by the Worthington-Simpson Company Ltd., which is the British affiliate of the Worthington Pump and Machinery Company. The Diesel engines for the pumping stations are being supplied by three of the leading British and Continental manufacturers—Sulzer Bros., Werkspoor, and Harland and Wolff. C. & G. Vokes air filters are being supplied. Besides the main engines twelve National Diesel three cylinder, four cycle engines of 75 b.hp. at 500 rpm. are being installed to drive B.T.H. (d.c.) generators and Reavell compressors which are driven off the main engines by Texrope drive for standby power and lighting plants at the pump stations. A further 18 Diesels are of 13 b.hp. at 800 rpm. in two cylinders driving Worthington-Simpson centrifugal booster pumps. Then there are twelve Diesels of similar design but in four cylinders developing 30 b.hp. for fire pump service. Eleven others, completing the 53 small Diesels used in addition to the 45 large Diesels consist of 11 sets having various horsepowers.

All of the auxiliary Diesels are being built by the National Gas Engine Company, Ltd. The lubricating oil for the Diesel engines will be cleaned by Hopkinson centrifuges. A vast number of large and small valves were required for the line.

One point in connection with the construction of the Iraq pipeline that is significant and worthy of mention is the fact that throughout the work relations with the native elements and with state and local authorities have been maintained on a friendly and satisfactory footing. Bearing in mind that the line extends across five countries and that in the ranks of its employees are included representatives of a dozen or more different nationalities and racial elements this is a remarkably fine record. Its accomplishment probably has been due in part to the fact that a number of the directing and field officials of the company have had long experience in dealing with Eastern peoples.

The policy of the company of conducting its operations with strict regard to native customs and predilections has enabled the work to be carried on without difficulty or interruption. Particularly have they been able to keep on good terms with the migrating tribes journeying from North to South.

As this article is being written operations on the construction work are settling down for the winter. The main line welding was finished on November 19 and work is now concentrated on the completion of the pumping stations and the connection of them with the main line.

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Cooling Problem — Where Water is More Precious Than Oil

THERE are frequently several uses for heat exchangers in connection with either Diesel engines or pipelines, but it is believed that the 45 large heat exchangers now being installed in the new 1,150 mile pipeline of the Iraq Petroleum Company, Ltd. are a novel application.

The Iraq pipeline runs through desert country where water is even scarcer than oil—yet water is the only suitable medium available for cooling the jackets of the Diesel engines operating the pumps along the pipeline. It is obviously impossible to supply the engines with fresh water for cooling, throwing the used water away. It is also prohibitive to use cooling towers for each engine as even the cooling tower would cause an evaporation of several percent of the water each time it was circulated. The loss from cooling towers would be 12 gal. per minute, thus necessitating a make up of thousands of gallons per day for each pumping station.

In order to conserve water the jacket water from the engines is cooled in the Foster Wheeler heat exchangers with the

Blondin or cableway at Haditha for conveying supplies for the Iraq pipeline across the Euphrates. Pipe is being swung across the river and is stacked in the foreground for loading. On the river just below the pipe is a single cable ferry that makes swift crossings by using the river current.

oil from the pipeline. The atmospheric temperature in this region runs as high as 135 deg. but the pipeline is buried under the sand where the sub-surface temperature averages about 75 deg. It is estimated that under most adverse conditions the temperature of the oil in the pipeline will never exceed 110 deg. and 590 gal. of this oil per minute flowing through the heat exchangers will cool the jacket water to 125 deg. F.

The flow of the jacket water will be at the rate of 150 Imperial gallons per minute, during full load operation. The quantity of oil flowing through the exchanger may be varied to maintain a constant water temperature.

Each heat exchanger contains 1,560 sq. ft. of tube surface. The pipeline oil makes a single pass in the shell and the water from the Diesel engine jackets is cooled while making several passes through the tubes. There are 15 pumping stations on the pipeline, each of which is equipped with three Diesel engines. Two engines are sufficient to carry the load, the third acting as spare. One heat exchanger is installed in connection with each engine and will serve to cool it as described above.

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Along the Iraq Pipeline

Blinding Sand Storms and Native Eccentricities Along the Route of the Iraq Petroleum Company's Pipeline, Described by M. E. Giersbach of the Four Wheel Drive Company, After a Year in Iraq

Ambulance unit of the Iraq Petroleum Company; fortunately there were but few calls for this form of transportation.

WHEN I ARRIVED in Haifa, Palestine on May 22, 1932, the first task that confronted me was the assembling of the big FWD six-wheel-drive truck that I had brought with me. We assembled the truck right on the docks with the temperature around 120 degrees, using native help. These natives, although not at all mechanically minded, are willing workers providing constant supervision is exercised over them. Considering the lack of equipment and trained help, we were fortunate in getting the truck assembled in five days; upon completion of this task the truck was immediately assigned to the Mafrak camp at Mafrak, Transjordania, where the first of the series of pumping stations was being laid out. Eventually, the truck was equipped with a trailer and made trips to all the different camps on the pipeline, hauling the heavy loads of material needed in the construction.

Fifty million dollars seems like a lot of money for a twelve hundred mile pipeline; but to one who has spent a year in the Near East working on the Iraq Petroleum Company's pipeline it is a constant source of wonder that it can be built for such a modest sum, considering the difficulties of every description which face the builders.

Blinding sandstorms, which stopped all operations made the job difficult and life miserable for those who were out in the open. In one case when we were traveling from Damascus, Syria, to Baghdad, Iraq, we ran into a storm which lasted for several days. The cab of the truck, although proof against the worst rainstorms, gave very little protection against the sand which filtered in through every crevice. The driver and myself were finally forced out of the cab and had to seek protection underneath the truck, using a tarpaulin for covering. The entire day was spent in this shelter and we could not emerge until nightfall. During the height of the storm one could not distinguish objects three feet away. These storms usually obliterated the trails making it quite dangerous for the uninitiated to travel. The temperature during the day reached 135 degrees, and at times caused the levers in the cab of the truck to become so hot that it was impossible to touch them with bare hands, nor could one touch the steel window-ledge due to the intense heat.

Four Wheel Drive truck and trailer crossing the Syrian desert at night, accompanied by an armored car for patroling the less friendly sections of the desert.

In each camp along the pipeline temporary buildings were erected for the housing of the men. These were constructed of sheet steel, and with the hot desert sun pouring down on them all day they became veritable ovens, making it impossible to sleep in them at night so that all beds were usually pitched outside and we slept in the open. Life in the various camps, after working hours, was very pleasant. One could play cards or other games; outside sports consisted of soccer and baseball, and golf also had its following. Organized teams of Europeans versus Natives provided a game of soccer that was hard to beat, and due to the intense, but good natured rivalry

among the opposing teams, the game always had a very enthusiastic following.

The large number of insects prevalent in these lands are a great nuisance and at times an actual hazard to health. Particularly annoying are the scorpions and centipedes, whose sting while not necessarily always fatal is very painful, and is greatly feared by whites and natives alike. The natives suffer particularly because many of them go without shoes or stockings, and are therefore more open to attack, as these pests lurk under sticks and stones everywhere. The scorpion strikes so fast that one cannot see the movement of its tail which carries the stinger. If one does happen to crawl on your person the best and only thing to do is to wait until it decides to crawl off. To attempt to brush it off means getting bitten, as they strike at the least provocation. Other pests such as the mosquitoes and flies, the sand fly being the worst, are also found in large numbers and are as a rule disease carriers. However, the Iraq Petroleum Company maintains a very competent medical staff, with doctors located in each camp who take care of all health and sanitation problems.

Heavy going at Wadi Tharthar along the route of the Iraq pipeline; flooded area, January 1933.

The natives of the various countries through which the pipeline runs are generally friendly and rarely do any damage except among themselves. The natives of Transjordania were the only ones allowed by their government to carry arms, and the majority of the arms carried by them dated back to the world war. In most cases they were sadly in need of repair, and were carried along more for the moral support they gave than their usefulness for protection.

When we drove the truck through the various villages and stopped for rest, we were always invited to partake of refreshments, with the headman of the village. At these functions we sat on the floor on mats, and the food to be consumed was put in one large bowl before everybody. Tea and native bread were passed around and then everybody helped himself from the one bowl using fingers in lieu of tableware.

Probably there is no place in the world where begging is more prevalent than it is in the native villages. It is truly a regular pastime with the natives who ask for everything from a piaster to canned food, and woe to him who gives something, as he is immediately surrounded by a clamoring crowd who demand *baaksheesh*, and if it isn't forthcoming, you can rest assured that you will be followed by a shower of stones as you drive out of the village. The natives are also habitual hitch-hikers, and although they haven't reduced it to the fine art that it has become in the United States they try to get a ride wherever they wish to go. The natives being entirely unfamiliar with the various types of equipment sent over for the pipeline, the only way they could be taught was by actual experience, and even this sometimes failed to do the job. They had been warned for example not to ride on the front end of the trucks due to the possibility of accidents. They persisted in the practice, however, and as a result several lost their lives, but even this example did not deter the rest from doing the same thing. Accidents ceased only when the drivers of the trucks kept them off and made them walk. They finally were convinced that they were not supposed to ride on the front end of the trucks, and so another difficulty was overcome.

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Model Oil Port For Haifa

Palestine's Modern Harbor Will Provide Complete Facilities for Handling Petroleum Delivered by Iraq Pipeline — Special Safety Provisions Incorporated.

CONSTRUCTION of modern harbor works at Haifa in order to provide Palestine with the port facilities needed to care for an expanding export and import trade was projected as far back as 1922. Early in 1929 the actual work of development was begun under the direction of Messrs. Rendel, Palmer and Tritton, Ltd. from plans of Sir Frederick Palmer. The main work was completed a few months ago and on October 31, 1933 the harbor was formally dedicated with appropriate ceremonies.

While the decision to make Haifa one of the two deep-water terminals of the Iraq pipeline had not been reached at the time when the plans for port improvement were first drawn, it had been arrived at by the time the final layout of the harbor was made. Accordingly plans for a complete oil terminal with docks and storage tanks were incorporated in the scheme. By the time oil begins to move through the line Haifa will be supplied

An average Iraq load: pipeline crew with tractors and equipment loaded on a White truck and trailer

with thoroughly up-to-date facilities for handling this particular kind of traffic.

The main features of the oil terminal are an oil dock located just west of the lee breakwater and a reclaimed area known as the East Reclamation which provides the site for a tank farm.

The dock will be separated from the rest of the harbor by a main jetty about 450 metres (1,485 ft.) long, parallel with the lee breakwater and by a subsidiary jetty about 150 metres (495 ft.) in length. Both jetties will be constructed of reinforced concrete and the entrance passage between the jetty heads will be about 100 metres (330 ft.) in width, being closed by a movable steel boom which can be withdrawn to allow entrance or egress. The dredged depth within the dock will be 10 metres (33 ft.), with provision for deepening to 10.6 metres (35 ft.) if required. Two vessels 151 metres (500 ft.) in length can be accommodated at the main jetty while two additional berths can be provided at the lee breakwater if needed.

About 100 metres (330 ft.) west of the main jetty a floating boom will be moored to keep steam tugs and other small vessels from approaching the dock.

In connection with the loading of oil to tankers a service area of about three acres is being reserved on reclaimed land at the foot of the main jetty. This will provide space for such plant equipment as a boiler-house, junction and manifold chambers, mess rooms, stores, fire-fighting plant, offices and other facilities.

The site of the tank farm will be protected on the seaward side by a rubble dyke. A large part of the area, some 20 acres, will be reserved for the use of the Iraq Petroleum Company. It will be fenced in and surrounded by a safety zone.

Twelve Hopkinson centrifugal separators will purify the lube oils for the 45 Diesel pumps on the Iraq pipeline.

Access to the service area at the foot of the main jetty and between it and the tank farm will be provided by means of a roadway running along the top of the rubble dyke. Rail access will be given to the service area and possibly to the tank farm also.

Every consideration has been given to the provision of adequate protection against fire and the facilities at Haifa are ahead of the times in this respect. Precautions include the following:

Comparative isolation of the dock by its location, by a protective floating boom (thus creating a controlled safety water zone west of the dock), and by land fencing ashore, giving a controlled land zone south of the dock.

Fireproof construction materials for the jetties.

Curtain wall cut-offs along the jetties to cut off floating oil in case of accident and a direct-acting steel draw boom at the entrance.

Kerbs along both edges of jetties, graded decks and trapped drains.

Railway sidings within the oil dock area laid as dead ends to keep steam locomotives outside the oil area.

Special control and supervision of the whole area which is subject to special fire regulations.

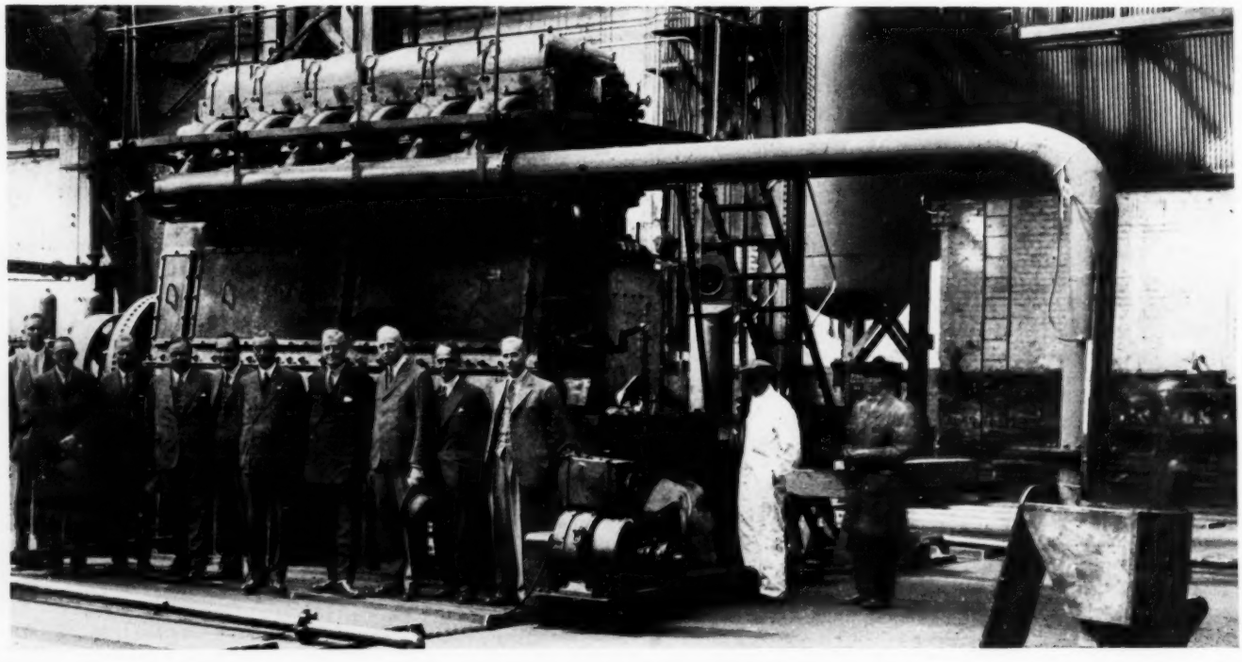
Conversion of coal-burning harbor tugs to oil-burning.

Fire-fighting installations consisting of four independent units within the oil dock and one unit in addition fitted to the larger tug, which already has a fire pump mounted.

Petrol pump at Station T 1 guarded by natives.

Camel guarding graph

The first Diesel engine for the Iraq pipeline at the official test; from left to right: H. A. Hemmick, P. G. Douglas, A. Clifford Hartley, J. A. Jameson, I. C. Green, Sir John Cadman, H. P. Harland, H. S. Austin, L. V. Le Mesurier, and H. F. Purday. (Photo specially taken for World Petroleum.)



A Profit on The Whole Barrel of Crude?

Better Balanced Marketing of Petroleum Products as a Solution of Difficulties Created by an Over Supply of Fuel Oil. A Ready-Made Market Awaits Investigation and Development.

BETTER balanced marketing is coming to be more and more widely recognized as an urgent need of the American petroleum industry. Without giving too much heed to the cry that the market for gasoline is nearing the saturation point it must be admitted that in the future motor fuel consumption will expand at a slower rate than in the past. Concentration of all sales effort on this one product may no longer bring the rich returns it once did. More attention needs to be devoted to developing the use of other products, particularly the one which has been too often a source of market weakness and financial loss—fuel oil.

In the early days of the oil industry the market for its one important commercial product—kerosene—lay ready to hand. It needed only to be occupied. By the time other methods of lighting began to offer serious competition the motor car came along. Again a market of vast proportions was opened to the petroleum industry, which faced a difficult task in attempting to keep pace with the swiftly expanding demand for gasoline.

Today there are those who believe that the time will come, and that rather quickly, when fuel oils of various kinds will replace gasoline as the chief product of the industry quite as effectively as gasoline has displaced kerosene. The one great field already opened for its occupation is that of domestic heating but other uses are assuming a rapidly growing importance. This great potential market differs, however, from those that previously have absorbed the energies of petroleum refiners and distributors. It is not going to be presented to them on a golden platter. Competition already is there and it is growing stronger. The oil companies cannot depend entirely on somebody else to develop this important market. If they want to conquer it they will have to get on the firing line and join the fighting. Fortunately for themselves they are in a good position to do this.

The petroleum industry in the United States is geared to an expanding market but it faces the probability of a slowing down in some parts of the mechanism. Specifically it is threatened with the loss of a large share of its export trade as the petroleum resources of other countries are developed to the point where they can supply their geographically logical markets. Domestic demand for gasoline, burdened with a crushing load of taxation, will increase more slowly than heretofore. Capital, plant, labor and management in the industry are capable of producing a far larger quantity of gasoline than the market can absorb. A new political economy is committed to making the operation of the vast petroleum organization profitable. The effective way to do this is to develop the full logical market demand for all petroleum products. Of these fields, as previously stated, the most important now ready for exploitation is that of domestic heating.

Let us glance for a moment at the growth already recorded in this market and at its undeveloped potentialities. In 1923 there were installed in the United States 58,800 domestic oil heating units, consuming 2,820,000 bbl. of fuel oil, valued at $10,067,400. By 1932 installations had increased to 733,100 consuming 40,840,000 bbl. of fuel oil valued at $120,069,600. Certainly this is already a valuable market and one that progressive oil companies are perfectly aware of. Its possibilities are conservatively estimated at 7,000,000 domestic oil heating installations, based on the number of homes belonging to families whose scale of living suggests a desire for the increased comfort of oil heat, whose incomes indicate the ability to satisfy this desire, and whose homes are located in a climate which necessitates some form of central heating plant. With an average estimated consumption, based on figures from the U. S. Bureau of Mines and other authoritative sources, of 50 bbl. per year per installation, there is a potential market in the United States for 350,000,000 bbl. of fuel oil per year or considerably more than the quantity presently available from the amount of crude refined for the production of gasoline.

Occupation of this huge potential market, which the accompanying chart indicates should be accomplished roughly about the end of this century at the present rate of growth will confer obvious benefits on the petroleum industry. The fuel oil surplus will disappear and the creation of a large profitable market for fuel oil will remove part of the burden of carrying almost the entire petroleum industry from the gasoline sales, thereby enabling the oil companies to market gasoline at a price which will assure the continuation of gasoline consumption at an increasing rate. The sale of fuel oil for domestic heating probably never will be subjected to the terrific burden of taxation that gasoline has had to carry.

Modern type service station adapted to effective display of domestic oil heating units.

The conception of the motor car as a luxury has changed only recently to its recognition as a necessity; but the requirement for central heating is recognized even by legislators as of the first importance. Brief experience in regard to attempted raids on the fuel oil trade by state legislatures has already indicated that it is a relatively simple matter to enforce a sane attitude on revenue-hungry state governments when the health and comfort of thousands of families is jeopardized.

Another important consideration is suggested by the experience of public utility companies who have found during the business depression that their domestic load is the one back-log which has carried them through a period in which industrial consumption of gas or electricity has fallen off to an alarming degree. A new appreciation of the value of this almost unvarying demand has arisen among gas and electric companies. The petroleum industry has had reason to consider itself fortunate that the consumption of its products has fallen off so little. But even the use of automobiles is subject to greater restriction during periods of adversity than is the use of central heating plants in homes.

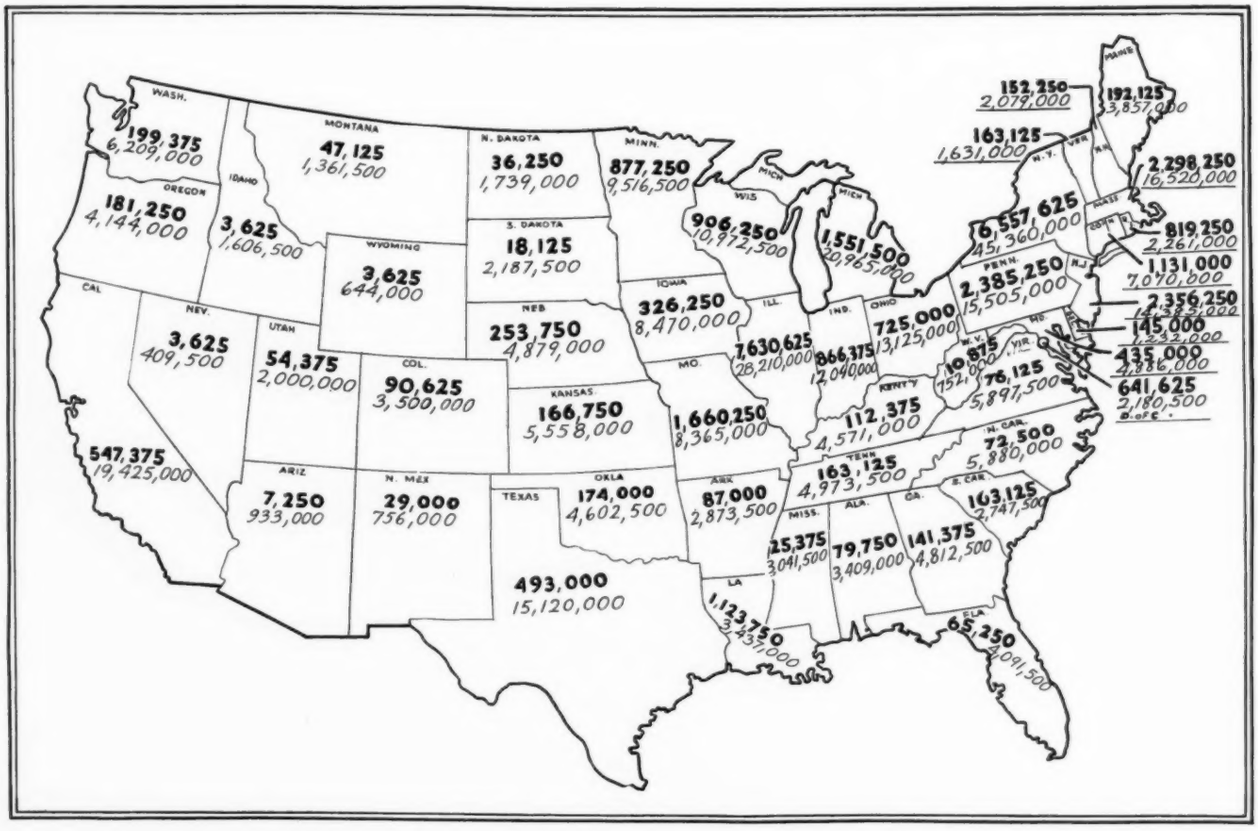
Fuel oil for domestic heating presents possibilities of a tremendous and rapidly expanding market, an unfluctuating demand, and is not subject to tax raids such as have greatly reduced the value of the gasoline market. It remains simply to consider means whereby the petroleum industry can stimulate this market, assist in its growth and assure itself of a reasonable measure of the benefits from the addition of this large sales area.

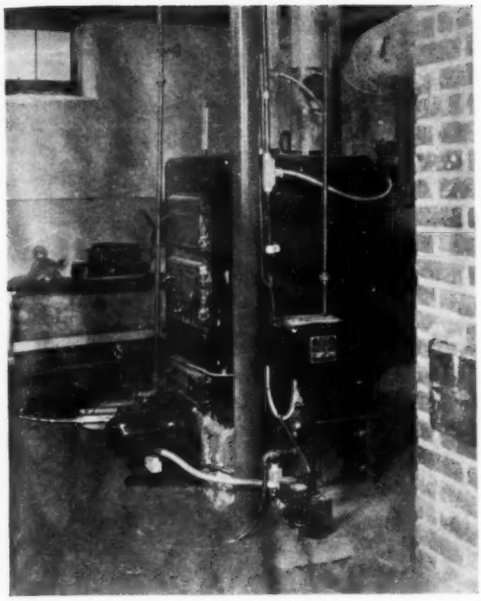
Positive action is needed in order to win and hold this market for fuel oil for the very good reason that competing interests are undertaking a vigorous campaign to seize it. The gas companies, in and about the larger cities, are going energetically after the business of domestic heating. They have established low rates on gas supplied for this purpose and offer exceptional terms for the installation of gas heaters. In some places, as in Chicago, heating plants are installed without cost to the householder, who is allowed to keep them in operation for a year before he is expected to make any payment. If, at the end of that time, he decides not to retain it the gas heater will be removed and the original equipment reinstated without charge.

Gas is exploited as the ideal form of heating and the claim of oil to greater economy is disputed by the gas companies with the counter assertion of higher efficiency for their product. In many places groups of well trained salesmen are sent out to make a house to house canvass, extolling the merits of gas heat and soliciting permission to make installations without cost to the householder.

In contrast to this intensive effort the oil companies have done little or nothing to hold this important field for their product. The burden of selling the idea of oil heat for dwellings and business buildings has been left to the manufacturers of oil burning equipment. Many of them have been extremely active and successful. In rural districts where gas lines do not penetrate they have the field to themselves but in urban communities, which of course constitute the richest part of the field, they have not the resources to match the high-pressure drive of the financially strong public utility organizations.

Bold-faced figures represent the approximate number of domestic oil heating units at present installed in each state: light-faced figures represent the potential market for these units calculated on the basis of income, standard of living, climate and other factors.





Domestic oil heating unit installed and consuming an average of 50 bbl. per year of fuel oil.

The interest of the oil companies in this competition appears clear enough to an outside observer though it seems not to be fully appreciated among some at least of the companies themselves. With their widespread sales organizations and myriad points of contact with the public there are many ways in which they could forward the cause of oil heating with no very great expense.

The valuable service rendered by the American Petroleum Institute in assembling the best technical knowledge available in regard to producing and refining of petroleum products, and in acting as a clearing house in the never-ending battle against the attacks on the industry carried on in state and national legislatures, frequently inspired by competitive industries, is widely recognized. It is rather surprising to observe, therefore, that among all the valuable committees formed by the Institute there is not one devoted to the investigation and promotion of new markets in fields such as the one under discussion. It would seem that the formation of a division or a committee with this special objective in view is a step that might well be taken.

Such a committee could do valuable work in cooperation with the American Oil Burner Association, which in late years has become a powerful trade group. The Oil Burner Association has paved the way for a careful investigation of the domestic fuel oil market by the petroleum industry by producing a careful and accurate report which gives an index number for every county in the United States, indicating its potential value as a market for domestic oil burners. As this is compiled in relation to a base index comprising such factors as the climatic conditions of each county, the financial rating and standard of living of its residents, the report constitutes a valuable foundation on which to build a study of the market for fuel oil. A detailed investigation of this market for the petroleum industry, along the lines suggested by J. David Houser (WORLD PETROLEUM, February 1933) or in any manner that a committee considered adequate, might well form the first step in exploiting scientifically the domestic heating market.

Company owned service stations form points of contact with the domestic heating market that are remarkably adapted to the promotion of oil heating. Service stations as they are operated today suffer from the obvious limitation of any retail outlet that depends on the sale of a single product. Retail marketing experience shows that elaborate outlets for a single product are generally impractical. Aggregate figures in the files of the petroleum industry confirm this conclusion and have led to various efforts to broaden the scope of service station operations. Using service stations as bases for building up the domestic fuel oil market would be one means of helping to justify the tremendous investment that they represent. The class of consumers who come in direct contact with the service stations corresponds closely to the class who compose the market for oil heating. The 7,000,000 families who may be considered the potential market for oil heat are contained within the ownership of the 22,000,000 motor vehicles in the United States today.

Oil burner advertising stresses the cleanliness and labor saving features of oil for domestic heating.

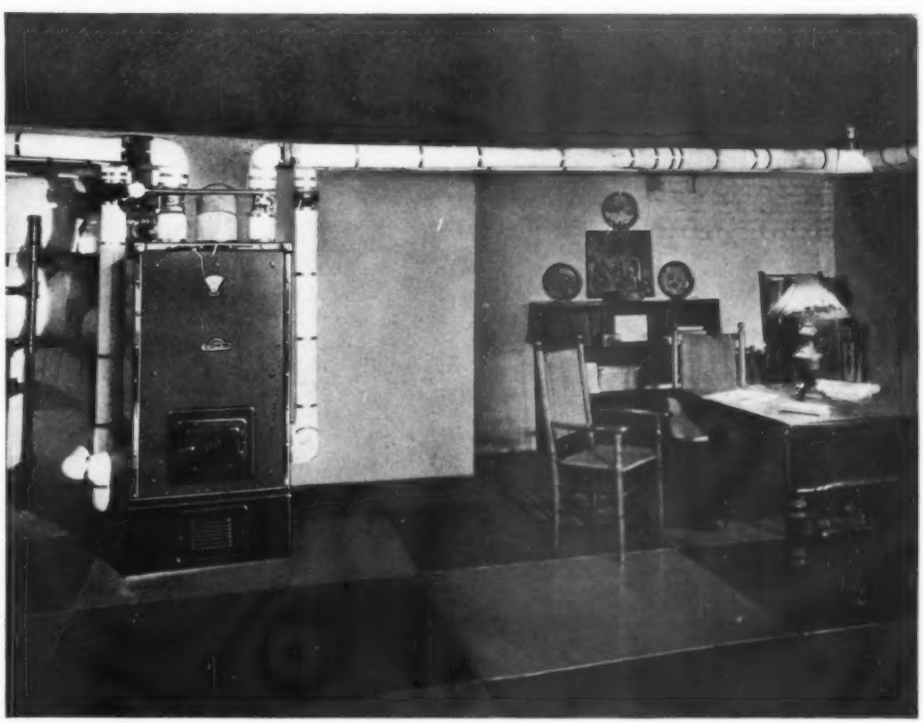
Use of these retail outlets for the display of oil burning appliances and as centers of distribution for advertising material that would encourage the use of oil heat would prove a practical stimulant to the sale of fuel oil. Occasional demonstrations of oil heating appliances in service stations would prove as practical as public utility companies have found the demonstration of gas or electric appliances.

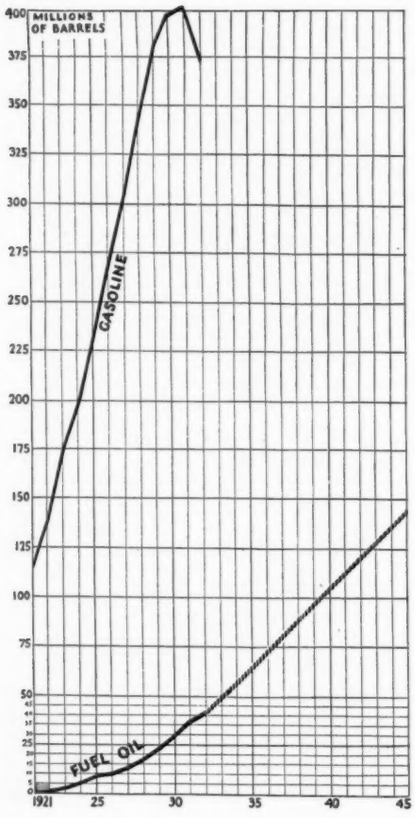
Service stations of the future could be designed to provide a display window such as is common to almost all other types of retail outlets. Such a display window could be used to call the attention of the motorists to the advantages of oil heating. Compared to the sale of accessories, the sale of oil burning appliances is a source of continuing profit. The demand for oil company products is only beginning with the sale of an oil heater, whereas the transaction is concluded when batteries or tires are sold.

Contact with the very class of people in a community who would be potential customers of oil heating gives the company owned service station a unique advantage in the expansion of this end of the business. It is hard to understand why use has not been made of this important leverage for educating the public on the subject of oil heating.

By advertising, by displays, perhaps by assistance in financing, and in a dozen other ways that would be revealed by an analysis of the field, the petroleum industry can stimulate the sale of a commodity that is treated now as a by-product but is capable of developing a vastly increased volume of business.

Oil companies, individually or as a group, could powerfully assist in the sale of domestic oil heating units and in com-





bating the efforts to hamper the spread of their use.

Manufacturers of domestic oil burners have had to face the mass attack of institutional advertising and highly organized sales campaigns by the gas industry. In some cases attempts have been made to enact legislation which would hamper the spread of oil heating. By helping to repel such assaults and by placing the advantages of oil fuel before the public the oil companies would serve their own interests and extend heartening support to their allies in the oil burner industry. Some of the funds now expended in the fight for gasoline gallonage might well be devoted to this cause.

Obviously, an intelligent campaign to stimulate the sale of domestic oil burners, and hence the sale of fuel oil, would pay increasing dividends to the oil industry. Adapting leading service stations in suitable communities to the demonstration of oil heating units; using these stations as bases from which to conduct the sale of fuel oil equipment; institutional advertising; distribution of educational literature; financing the sale of oil burning appliances, and other steps indicated by a thorough survey, would rapidly develop an auxiliary market that would remove in some measure the sole dependence of the industry on gasoline and lubricant sales for profits.

While the market for fuel for domestic heating is the outstanding possibility open for immediate development there are many other directions in which the industry might stimulate the sale of products. In New England range oil for cooking has in some instances replaced gas. Recently the demand for range oil burners has increased tremendously. While there were but two regular manufacturers

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Consumption of gasoline and fuel oil compared from 1921 to 1932: broken line indicates a potential market for 150,000,000 bbl. of fuel oil by 1945 as a projection of the present rate of demand.

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of distillate burners in 1923, and while this figure had only increased to six by 1928, there were 129 manufacturers in 1932. By the end of 1932 no less than 284,314 range oil burners were installed in the United States, consuming 142,157,000 gal. of distillate per year. Between 1928 and 1932 the average cost per unit for range oil burners had been decreased 50 percent, from $30.15 to $15.00. Along with this reduction in the average unit cost has gone tremendous improvement in the burners. Both range oil burners and domestic heating units are being rapidly improved just as the motor car became more practical year by year, and with its growing dependability built up a huge market for motor fuel. A similar development can be encouraged in the domestic heating and cooking field.

Demand for oil for use in a new type refrigerator, the growing use of Diesel engines, the use of petroleum products for the propulsion of the new type of train being built by the Union Pacific, all represent uses for heavy oils which might profitably be encouraged.

Just as individual oil companies have studied ways and means of rendering new services to motorists in an effort to encourage motoring and the demand for motor fuel, so the domestic heating fields invite similar investigation.

One of the expensive features of domestic oil heating installations is the large tank which must be put down for each unit. With the average cost of these tanks installed at $200 and the concentration of oil heating units at 20 per linear mile, would it not constitute a saving to consumers and fuel oil sales units to pipe the oil to the homes? If the above conditions exist in a community where the cost of laying 4-in. fuel oil line per mile is $5000 this possibility is distinctly worthy of careful examination. Removing the annoyance of checking the tank at frequent intervals, of the possibility of running out of fuel at a critical time, and of the expense of truck deliveries, would benefit consumers and bulk distribution plants. Where piping the oil to the consuming units proved impractical an automatic gauge would prove a convenience which would be one step in pressing home to the potential consumer the advantage of oil over coal.

Gauges which passed an electrical warning to the bulk plant would supply the consumer with practically the same convenience that a pipeline distribution system would give consumers in more populous districts.

Briefly the question is whether the petroleum industry, faced as it is with an oversupply of certain products, should wait for the demand to develop itself or should itself help to extend that demand? Should the oil industry run the risk of losing a valuable market to competitive industries through lack of aggressiveness in developing logical outlets for its products? Unlike their experience with kerosene and gasoline it is clear that if the oil companies wait for demand in this field to come to them a large share of the potential sales will be diverted elsewhere.

A few progressive companies started work in this field some years ago with results that appear to have been very satisfactory. But progress under these conditions will be slow and far less complete in the face of competition from the coal, electric and gas industries, than would be the case if the petroleum industry were to attack the problem as a unit. The machinery already exists. The cooperative method presents such obvious advantages that if the industry studies the subject it seems certain that it will be adopted.

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Front Cover

OUR FRONT cover picture this month is a striking view of Haifa harbor from Mount Carmel. Haifa harbor, opened on October 31, this year, is an important port serving Palestine's growing foreign trade; it is also the terminal of one fork of the Iraq Petroleum Company's pipeline from Kirkuk, where it draws crude oil from the rich deposits of Iraq and delivers it to the Mediterranean at Haifa and Tripoli. As constructed the port will make a model oil harbor described elsewhere in this issue.

Is a Monopoly Forming in Mexico?

Extraordinary Powers Granted Chief Executive May be Used to Nationalize Entire Industry Under Control of a Federal Producing, Exporting, Refining and Marketing Company.

Mexico, Dec. 29, 1933

A RECENT decree granting extraordinary powers to President Abelardo Rodriguez which originated in the Mexican Chamber and has been approved by the Senate will have extensive repercussions on the petroleum industry here. One of the first steps contemplated by President Rodriguez is the establishment by decree of a government-controlled petroleum company which will probably replace the Administrative Control of National Petroleum, a federal producing and refining organization. Eventually the national organization will produce, refine and market; meanwhile present plans call for an organization which will be capitalized at 10,000,000 pesos (approximately $3,300,000). The Mexican government will control about 40 percent of the stock of this company which will compete with privately owned companies that are controlled by Mexican or foreign capital.

While no definite announcements of important changes other than consideration of the establishment of a new national company have been forthcoming from the Mexican government, well informed sources in Mexico City and elsewhere predict that the changes contemplated will gradually become more restrictive on the activities of privately owned companies making competition with the nationally controlled agency increasingly difficult until eventually it may create an impossible situation for private companies. Mexico, it is considered, is following the monopolistic path indicated by the law of December 26, 1925. President Rodriguez announced that Mexican petroleum wealth has been exploited for the benefit of privately owned companies rather than to the best advantage of the state. He has, therefore, received power from the legislative body to amend the law of December 26, 1925 and has until August 31, 1934 in which to make whatever changes he deems necessary.

Reliable sources suggest that no new concessions will be granted to companies operating in Mexico and privately owned, either within or outside the country, and that all new exploratory permits will be reserved for the company which will be formed within the next few weeks. Moreover, it is confidently expected that the federal government will take advantage of any privately owned company's failure to live up to the exact terms of concessions to cancel these concessions and return them to the national petroleum reserves.

At least three of the directors of the new government-controlled company will be selected from high government officials and officials of the Bank of Mexico. Cabinet members are expected to be included on the Board of Directors.

One purpose of the new petroleum company will be to train Mexicans in petroleum technology but it is likely that foreign experts will be placed in charge of operations of the company at first.

Despite the tremendous revenue that the Mexican government has obtained from taxes levied on companies whose capital is obtained outside of Mexico and whose efficient exploitation of her petroleum resources has made Mexico an important petroleum exporting country, the government hopes to derive further benefits from an eventual complete nationalization of the industry. Rumors have already appeared in the daily press to the effect that Jersey Standard interests (Huasteca Petroleum Company) contemplate withdrawal from the Mexican industry. The rumors, however, have not been confirmed by the Jersey or Huasteca Company who state that they see nothing in the present situation to change their status in Mexico. The Mexican Eagle (Royal Dutch Shell), with larger interests in Mexico, may be expected to remain and seek relief in the Mexican courts from any attempt on the part of the national company to interfere with concessions already granted to them.

The probability that the national government is establishing machinery which will eventually lead to a government monopoly in the Mexican oil industry, besides being indicated by the importance attached in Mexico City oil circles to recent action of the government in granting Rodriguez unusual powers over the oil industry, derives even greater credibility from the left wing tendencies of the National Revolutionary Party which dominates the federal government. Its action in accelerating the trend toward a national monopoly will be doubly interesting in view of the recent loans made by foreign oil companies to the Mexican government which accepted these large loans in the form of advance payments of petroleum export taxes.

The six year plan which the dominant political party is undertaking for social and economic rehabilitation of Mexico calls for modification of concession regulations to permit reducing in area those already granted, to declare pipelines public utilities, and to make use of every possible means to nationalize petroleum resources.

These avowed purposes of the National Revolutionary Party indicate that there may well be a strong foundation of truth in the rumors that are circulating concerning the purpose of the recent legislation regarding the petroleum industry.

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Trench digging machine for the Iraq pipeline crossing the Euphrates on the cable ferry

Centrifuge Separation in U. S. And France

Vacuum Oil Company's Pioneer Work in Continuous Centrifugal Acid Treating With Sharples Specialty Company Results in Improved Lubricating Oil Plant at Paulsboro and Port Jerome

In JULY 1932 the Vacuum Oil Company, Inc. started operation in their Paulsboro refinery of the first commercial plant for the continuous acid treating of cylinder stock with centrifugal separation of sludge.

For many years oil refiners had deplored the deleterious effect of the prolonged contact of acid and sludge with oil necessitated by the time required for the agglomeration of the sludge and its separation by settling under the force of gravity. The limitations of gravity settling were especially objectionable in the case of naphthenic lubricating oils and very high viscosity paraffinic oils because of the necessity of arbitrating between a temperature low enough to prevent undesirable reaction of the acid with the oil and a temperature high enough to give sufficiently rapid gravity settling.

In order to reduce the time of contact between acid and oil many people had suggested the use of centrifugals for the separation of sludge and a considerable amount of experimental work was done both in the laboratory and on a semi-commercial scale but because of the need of using equipment unsuited to the requirements all of this work came to an unsatisfactory end.

A little over three years ago the Vacuum Oil Company and the Sharples Specialty Company joined forces in attacking the problem.

After a thorough study of the situation a semi-commercial plant was set up using the most suitable available means of measuring proportionately, acid to oil, the proper contacting of the measured liquids and the centrifugal separation of the treated oil and sludge. The very first tests showed why most previous attempts continuously to treat and centrifugally separate sludge had failed. No unit of the equipment was satisfactory for its purpose. The acid proportioning device which had been entirely satisfactory when used with large flows of low viscosity liquids, such as naphtha, was found to be insufficiently accurate when used with comparatively low rates of flow of viscous oils such as cylinder stock. The mixers were not sufficiently sturdy when operated with cylinder stocks because of the high viscosity of the sludge. The Super Centrifuge was not adapted to handling large quantities of very viscous sludge separated and of retaining the sulphur dioxide vapors liberated by the treated oil and the sludge.

A long period of testing and development followed.

Five distinctly different schemes of proportioning acid with respect to oil were designed, made and tried before a device suitable for use in conjunction with the limitations of this process was perfected.

In the case of the Sharples Super Centrifuge it was found necessary to make changes in almost every part of the centrifuge to adapt it to the peculiar nature of the material separated. A new type of centrifugal rotor was developed to discharge satisfactorily the very viscous sludge and the spent acid which separated from the sludge. A new type of centrifugal housing was also developed for the discharge of the viscous sludge through permanently connected piping. The centrifugal was completely enclosed to avoid the escape of sulphur-dioxide fumes. A new method of feed control, made necessary by reason of the unexpected nature of the sludge-sour oil mixture, was also developed.

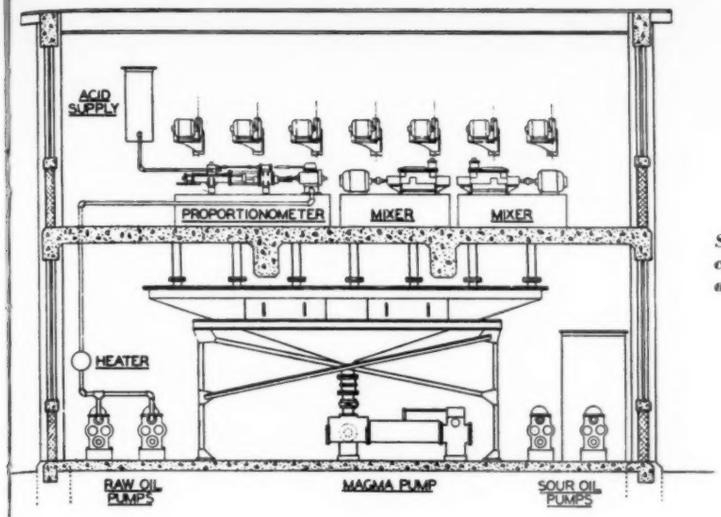
Investigation disclosed a close connection between the violence of the agitation of the acid with the oil, the time of contact, and the results obtained in the finished oil. To obtain the best results a new type of mixer was developed.

The outstanding achievement during this investigation was the very considerable increase in yield of oil.

After almost two years of testing in the semi-commercial plant a commercial plant was built having a capacity of 1,100 bbl. of cylinder stock per day. This plant was put into operation in July 1932 and has been running continuously since.

The contacting and separating equipment is divided into two groups each consisting of one proportionometer for proportionally measuring acid and oil, two mixers and seven Super Centrifuges. Each group is located on one side of the second floor of the building and so arranged that the sludge from all of the

First floor of building which houses continuous centrifugal acid treating plant; showing sludge hopper, magma pump, sour oil receiving tanks and heater.



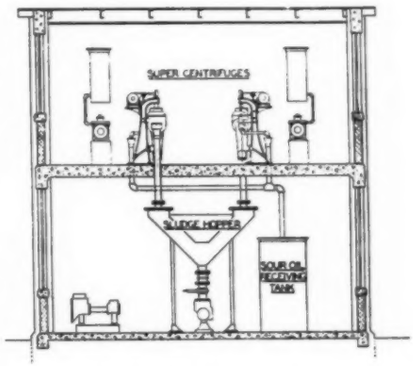
Side view of flow chart of centrifugal acid treating plant.

Super Centrifuges drops directly through the floor into a pyramidal sludge hopper directly beneath, from the bottom of which the sludge is picked up by a magma pump and pumped from the building into the sludge treating plant.

In addition, the first floor of the building houses the following equipment: (1) heater for raw oil, (2) pumps for pumping the raw oil through the heater, proportionometer and mixers to the centrifuges, (3) sour oil receiving tanks, (4) pumps for pumping the sour oil away to storage and (5) pumps to maintain the acid supply on the second floor.

The proportionometer used for measuring the acid in proportion to the oil consists of an oil meter interconnected with a combined acid pump and meter. The oil meter is of the duplex piston type. This is a positive displacement device and gives a very accurate measurement of the oil passed into the system over a wide range of rates of flow, temperatures or viscosities of the oil treated. The acid is pumped and measured into the system by a new design simplex steam pump. This pump is double acting, outside packed with plungers, valves, etc. of acid resisting metal. The valves of the acid cylinder are operated mechanically eliminating the inaccuracy due to the lag or slip and hammer which occurs in the commonly used check valves.

Both the acid valves and the steam valves of the steam cylinder are operated by a pilot steam cylinder and piston, the operation of which is controlled by a frictionless valve which is in turn controlled by the oil meter. By this arrangement one cycle of the acid measuring pump occurs for each cycle of the oil meter. The proportion of acid pumped is controlled by limiting the stroke of the acid pump and the stroke may be varied to give different acid proportions while the pump is in operation. Throttle valves have been incorporated in the steam drive to give smooth action of the steam pistons. This proportionometer will give an accurate proportional measurement of acid to oil over all rates from no flow to the maximum handled by the equipment. When there is no flow of oil the acid flow is shut off entirely.



End view of above diagram.

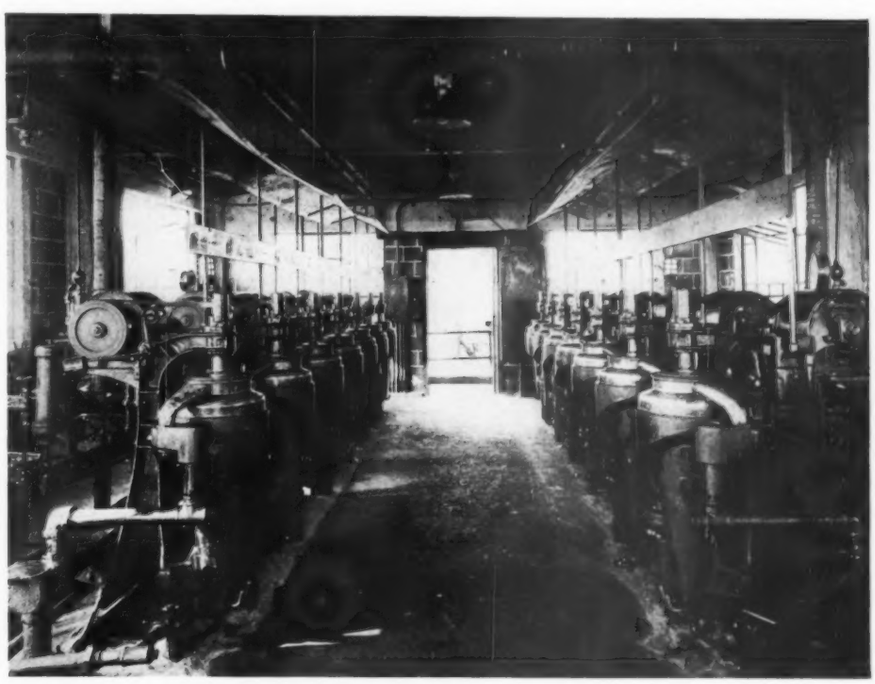
The mixer is of the multistage type. Correct factors for violence of agitation and duration of contact of the acid and oil have been incorporated in the design of the mixer so that the mixture leaves the mixer in a completely reacted state suitable for separation. The mixer is equipped with ball bearings mounted independently of the mixing chamber so that no acid or sludge may come in contact with the bearings and is driven by direct connected electric motor. The mixing chamber may be opened for examination and cleaning without removal of the mechanism used in the agitation.

The Sharples Super Centrifuge is adapted to this use with the special consideration of the discharge of sludge, elimination of sulphur-dioxide fumes, and protection from corrosion. The sludge collector is of large area with steeply inclined surfaces leading to a large discharge pipe so that the most viscous sludge may flow away readily by gravity. This collector is a part of the frame and is permanently connected to the discharge pipe by a slip joint to take care of heat expansion. The collector and joints are gas-tight preventing escape of sulphur-dioxide. The centrifuge bowl is of monel metal. Large ports for the discharge of sludge are a feature of the bowl.

The plant is normally operated on a cylinder stock from a Mid-Continent crude having a viscosity before treatment of about 170 seconds at 210 deg. F. It is heated to 150 deg. F. and passed through the proportionometer to the mixer where it is mixed with 98 percent sulphuric acid. After about a minute of contact in the mixers it passes directly to the Super Centrifuges where it is separated into sour oil and sludge.

The Vacuum Oil Company S.A.F. of Paris is now installing centrifugal acid treating plants in the Port Jerome refinery in France.

Super-centrifuges on second floor of plant for continuous centrifugal acid treating.



Active Leasing in U. S. Marks End of 1933

Increase in New Producing Wells in Proven Fields, a Feature of Last Half of 1933 — Extensive Exploratory Drilling in Mid-Continent Area Indicated for 1934.

By Basil B. Zavoico

THE RATE of development in the old and new oil fields of the United States, as well as exploration drilling, was influenced during the first six months of 1933 by the very low prices for crude oil and its products, and during the last six months of the year by the steadily improving price structure. In the proven oil fields the increase in the new producing oil wells was very marked in the last six months, 4,920 oil wells (preliminary figure) having been completed in the July-December period, as compared with 2,957 wells completed in the January-June period, an increase of 66.4 percent. A total of 7,877 oil wells was therefore completed during 1933, as compared with 10,444 completed in 1932 and 6,788 completed in 1931. Exploration drilling did not show any increase during the second half of 1933, as compared with the first half of the year, and in fact declined somewhat, due to the extended period of time necessary for geological and geophysical preparation for drilling in the case of existing oil concerns, and due to the continued lack of financing of individual ventures. In the last quarter of 1933, however, a very notable increase in leasing activity by oil companies was noted throughout the Mid-Continent states, and preparations were made for starting of a number of major wildcat tests. An important factor in the reduced totals of exploration work is the continuously increasing depth of wildcat wells, and hence the increased expense. Currently a wildcat well starting in the Gulf Coast or in Central Oklahoma is invariably scheduled to drill to 6,000 ft. or 7,000 ft.

Crescent Field

In 1933 a total of 3,163 dry holes was completed, as compared with 3,569 dry holes completed in 1932, and 3,659 in 1931. The completions of gas wells similarly declined in 1933 to 915, as compared with 1,027 in 1932, and 1,985 in 1931.

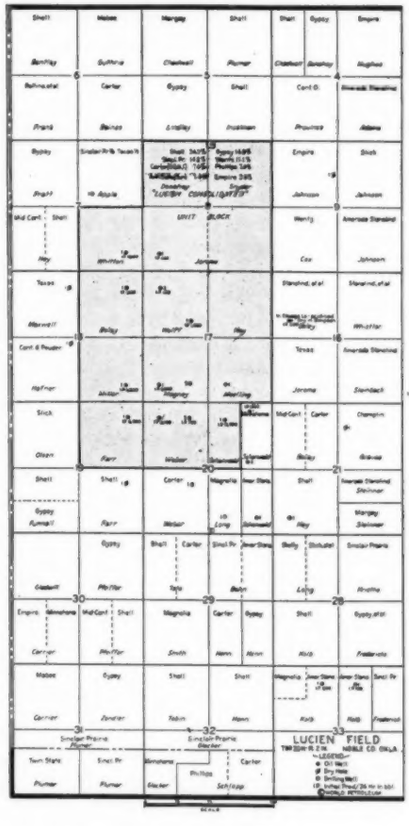
In the older major fields of United States intensive drilling campaigns were pursued in only two fields, the East Texas and the Conroe. In the East Texas field 2,200 oil wells were completed in 1933, as compared with 5,627 oil wells completed in 1932, bringing the total number of producing wells in the field to about 12,000, and cutting the average acreage per well to 9.15 acres. In the Conroe field the principal development took place during 1933, 580 oil wells having been completed in the past year, as compared with but 100 wells brought in till December 31, 1932. In Oklahoma, the Oklahoma City field development was of routine character, only about 50 producers having been brought in during 1933, bringing the total number of producing wells in the field to about 1,000. In the Kettleman Hills field of California, 20 oil wells were completed during 1933, bringing the potential production of the field to 315,000 bbl. per day in December.

In the coming year, 1934, active drilling will decline to a few routine completions in the East Texas, Conroe and Oklahoma City fields, all three pools having been already fully defined, and only some inside locations remain to be drilled. The Kettleman Hills field in California will continue its slow development program in 1934, drilling being curtailed to the minimum by the Kettleman Hills North Dome Association and by the Standard Oil Company of California.

Four new fields, discovered in 1932 and 1933, were actively developed during the past year.

In Texas the Greta field in the Lower Gulf Coast, discovered in May, 1933, had 100 producing oil wells by the end of the year and 25 tests were drilling. The Greta field had an estimated potential of from 75,000 to 100,000 bbl. per day at the close of 1933, and an allowable of 6,500 bbl. and actually produced about 1,000,000 bbl. to the end of the year. An area of 3½ miles by 2 miles (4,500 acres) has been proven for production, and further extensions appeared very likely. In addition to the main oil producing horizon, the Heterostegina zone of Middle Oligocene age, encountered at from 4,350 ft. to 4,400 ft., a deep sand was found productive on the east flank of the field at

Lucien Field



5,910 ft. and a shallow sand on the south end of the field at 3,500 ft. The recovery per acre possibilities are considered very good in the main producing sand encountered at 4,350 ft., due to its uniformity and continuity over the whole field, but the possibilities of the deep and shallow sands are undetermined and not particularly good due to the apparent irregularity of the sand bodies. Two major companies, the Stanolind Oil and Gas Company and the Atlantic Oil Company, entered the Greta field on a large scale by purchasing proven properties, while three pipeline companies built pipelines into the field, the Atlantic, Humble (S.O.N.J.) and the Texas. The Greta field, while not a pool of major magnitude, is an important addition to the country's oil reserve, and it will undoubtedly cause intensive exploration in the Lower Gulf Coast during 1934, possibly resulting in opening additional important fields in that area.

In Oklahoma, two new oil fields, Lucien and Crescent, were being actively drilled during 1933, and their development will extend into 1934. In the Lucien field, 17 oil wells were completed by the end of 1933, with an estimated potential of 55,000 bbl. per day. The development of the field has been most conservative due to the unit operation by the Lucien Oil Corporation, an operating company owned by all lease-holders in the field on a prorata basis. Spacing of the wells has been very wide, one to forty acres, thus reducing development costs. Sand conditions, however, have been found to be very erratic and on the whole not as favorable as in the other fields in Central Oklahoma producing from the same horizon, the Simpson sand of Ordovician age. The Lucien field will be fully defined during 1934. The Crescent field discovered during the summer of 1933 had seven deep producing wells at the close of the year with a potential of about 25,000 bbl. per day. An agreement between operators in the field limited spacing of wells to one per forty acres, contributing much to conservative development, and limited offset campaign. Carter Oil Company (S.O.N.J.) and the Gypsy Oil Company (Gulf) are the principal operators in the Crescent field. The extent of the field is not known as yet, though areally it will be small due to very sharp dips already noted on the east, west and north flanks. The producing sand (Simpson of Ordovician age), is of excellent porosity and promises good and uniform recoveries per acre.

In Michigan the Porter Township field was developed into a pool of considerable importance during 1933, and together with other recent discoveries during the past year, Michigan promises to become an important factor in domestic oil industry. At the end of 1933 Michigan had a potential production close to 100,000 bbl. per day, and an allowable of 30,000 bbl. per day.

Most important oil field development during 1933 has been the extension of the acid treatment of oil wells from Michigan into practically all Mid-Continent fields, increasing production of wells in limestones, sandy limestones, and some sands cemented with calcareous material, several hundred percent. New life was given to hundreds of stripper wells, while in several instances new fields with but nominal production after acid treatment have been transformed into profitable properties.

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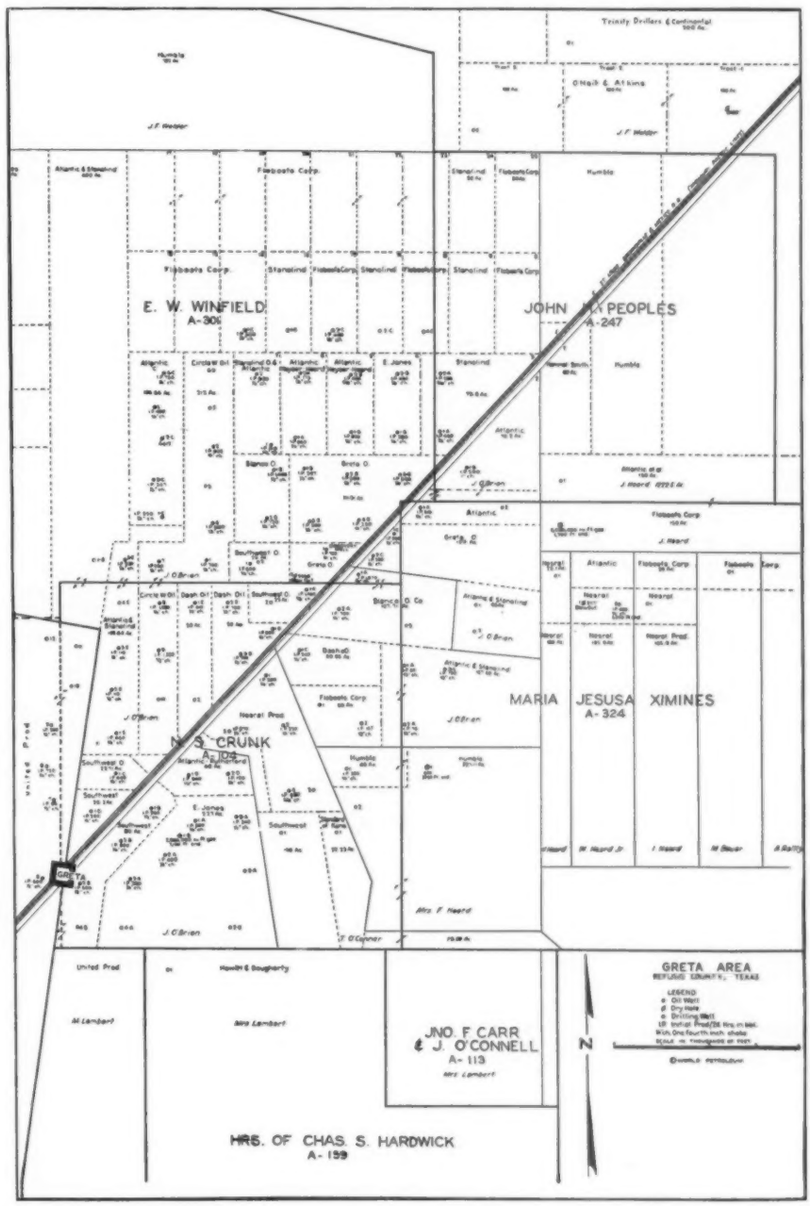
40 Years

THE LUMMUS of New York have recently issued a booklet entitled 40 YEARS IN DISTILLATION which presents in a most attractive form, profusely illustrated, the story of Lummus installations. Aside from its interesting story, the booklet is one of the most attractively prepared pieces of printing that we have seen recently.

Greta Area



Decreased Activity in Colombia

ACCORDING to the annual report of the Interventor Nacional de Petroleo for the year ending June 1, 1933, there were eight companies more or less interested in oil in Colombia; these are: The Texas Petroleum Company, the South American Gulf Oil Company, the Tropical Oil Company (Colombian subsidiary), the Societe Europeenne des Petroles, the Union Colombiana de Petroleos, Emilio Restrepo Callejas (heirs and others), the Richmond Petroleum Company of Colombia and the Colombian Petroleum Company. Companies that have suspended all operations in Colombia are the Mid-Continent Oil and Development Company, Lobitos Oilfields Ltd. and the Magdalena Syndicate.

The South American Gulf Company has withdrawn from the Ordonez and La Tigra districts and so far as private lands are concerned is now interested only in the Aguasclaras district. In conjunction with the Colombian Petroleum Company the South American Gulf Company has carried out extensive explorations and mapping operations on public lands in Norte de Santander, especially in the La Petrolea valley, where drilling operations were begun in January, 1933. The first well was sunk to 490 ft. and proved to be a gusher, yielding an oil with a paraffin base of low gravity, being in fact one of the lightest crudes ever produced in South America and certainly of the best quality yet found in Colombia. This well caught fire and burned for a long time. All efforts by local experts to extinguish the blaze having failed, the celebrated Oklahoma expert, W. M. Kinney, was brought from the United States by airplane, and the fire was put out after causing a total expense of about $100,000. A second well has been started.

Oil on Bahrein Island

The Societe Europeenne des Petroles has signed a contract with the government to make explorations on public lands in the Carare region. The Union Colombiana de Petroleos and the Callejas interests also have contracts to explore in the same region. During the year the only wildcat drillings were those made by the Richmond Oil Company of Colombia, which has sunk a number of dry holes in the Departmentos del Atlantico, Caldas, Tolima and Cundinamarca. The company has now stopped further drillings to await brighter prospects for the oil industry.

The activity of The Texas Company is now limited entirely to maintenance of its properties in Colombia, without any attempt at production. In an official letter to the Interventor, The Texas Company states that its inactivity has been forced upon it by the disadvantageous conditions imposed by the law of 1931 and other restrictions and burdens placed by the government on the use of private property.

The Tropical Oil Company, whose properties are located in the Department of Santander, is still the only company actively producing oil on a commercial scale. The total number of wells sunk by this company is now 689, of which 28 are dry holes. During 1932–33, 37 new producing wells were brought in, one was abandoned and 26 were deepened; the net number of producing wells is 661. During the year the company executed numerous improvements, the most important being a new natural gas system capable of supplying 55,000,000 cu. ft. of gas daily, 222,000 ft. of new piping has been installed and an equal quantity has been replaced; a new hospital, new barrel plant, new storage facilities and water supply systems have been completed.

The current depression has had its effect on the business of the Tropical Oil Company; the average amount of oil carried by the Andian pipeline from the wells to tidewater dropped from 52,000 bbl. in June, 1932 to about 35,000 bbl. in June, 1933. The total royalties so far accruing to the Colombian government from the operations of this field since initiation of exports in 1926 to January 1, 1933 have amounted to $7,729,906.29; during the same period the royalty per barrel fell from $1.20 to $0.39. Besides this the government has collected a total of $1,071,444.74 from the Andian pipeline, thus giving it a total revenue of $8,801,-351.03 from a total production of 113,279,-884 bbl. in 5½ years.

▼

Bahrein Development Expedited

OPERATIONS are being pushed ahead with unexpected activity on the island of Bahrein, where the Bahrein Petroleum Company Ltd. (Standard Oil Co. of Cal.) has discovered a plentiful supply of free-flowing oil of good quality during operations extending over three years. A crude pipeline is to be constructed immediately, three miles of which will be under the sea to deep water, and it is probable that power for the pumps will be furnished by Diesel engines. Part of the equipment for this engineering undertaking, together with 45 engineers and divers, left San Pedro, California, aboard the tanker EL SEGUNDO on December 30, on the 12,000 mile voyage to Bahrein and it is anticipated that the work will take about nine months. Presumably a refinery will be constructed at some suitable port where deep water is available and not too far from the pipeline terminus. In fact a refinery also has to be built in Eastern Saudi Arab if oil is discovered there in commercial quantities. Drilling must start by September 1936.

On Bahrein island three wells have been drilled, and three rigs are in operation, and as already published in WORLD PETROLEUM, oil of about 33.8–34 degrees A.P.I. gravity with about 450 lbs. shut-in pressure has been found at depths of around 2,000 ft.

Regarding the Standard Oil Company's other concession which is in Eastern Saudi Arab, the terms of its contract appeared in WORLD PETROLEUM of October last. Meanwhile, the world of oil is keenly interested in knowing just where this new supply will be marketed.

Were the oil concessions of Bahrein, Eastern Saudi Arab, Iraq, Persia, the Transferred territory and Egypt in the hands of a large number of operators instead of being controlled by a few major companies, some of whom are affiliated with governments, the Near East and adjacent markets would probably become a scene of a great oil war within the next three years. Even with the present control the situation has its tense moments and is not without complications that will take quite a little "oil diplomacy" to handle satisfactorily.

The great pipeline from Kirkuk to two points on the Mediterranean will be flowing up to nearly 30,000,000 bbl. per annum by the end of this year, meanwhile the Standard Oil Company of California is actively pushing its operations on Bahrein Island in the Persian Gulf, and has a geological and geographical party completing its survey of Eastern Saudi Arab. The Mosul oil fields of the B.O.D. have three rigs on located sites west of the Tigris, and the company was due to make its second payment, £120,000 gold, to the Iraqi government early this month. The oilfields of Egypt show a slowly declining production.

Hamad b Isa Al Kalifah Sheikh o Bahrein

World Oil Production—Official Figures for 1933

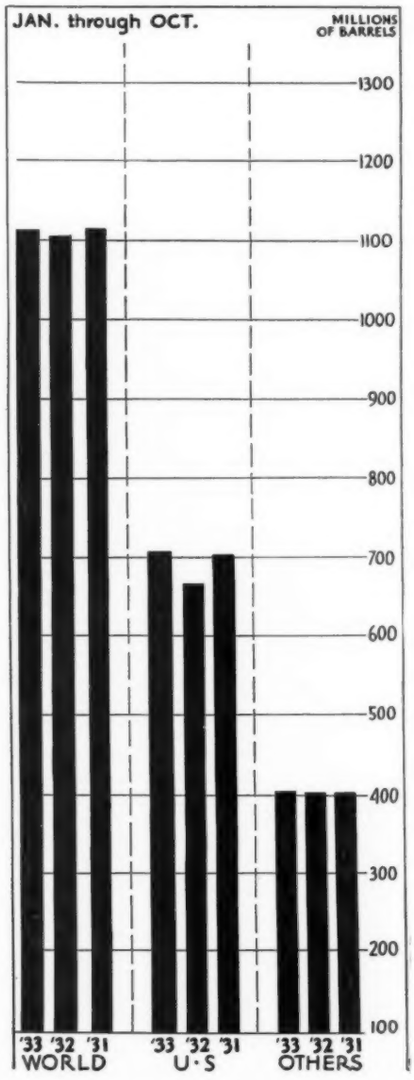
All figures furnished direct to WORLD PETROLEUM by Governments, except where otherwise specified

(Figures in U. S. Barrels—Conversion ratio 7 bbl. = 1 ton)

Country	January 1933	February 1933	March 1933	April 1933	May 1933	June 1933	July 1933	August 1933	September 1933	October 1933	November 1933
United States	63,998,000	61,029,000	75,302,000	65,313,000	84,747,000	82,841,000	84,387,000	85,239,000	78,186,000	76,017,000	69,755,000
Russia	10,382,400	10,162,600	11,003,300	11,824,400	12,794,600	12,489,400	11,837,000	13,402,200	14,340,900	14,595,000	13,479,200
Venezuela	8,750,000	9,985,711	10,324,328	9,340,870	9,380,893	9,354,387	10,197,425	10,367,511	10,231,410	10,852,653	10,843,910
Roumania	3,999,898	3,661,749	4,009,649	3,949,001	4,104,919	4,490,220	4,755,600	4,562,551	4,420,486	4,502,127	4,000,000
Persia[2]	3,563,112	2,929,668	3,683,386	3,984,519	4,370,835	4,452,000	4,648,000	4,669,000	4,109,000	4,549,867	4,199,797
Mexico	2,889,658	2,543,443	2,825,021	3,011,973	2,857,620	2,805,353	2,950,803	2,893,211	2,605,840	2,429,072	2,833,630
Netherland India	3,096,051	3,031,021	3,390,051	3,028,639	3,357,214	3,280,382	3,249,428	3,172,568	3,186,435	3,179,043	3,127,047
Colombia	1,005,353	1,035,273	1,218,626	1,093,410	1,169,238	1,113,328	1,189,655[4]	1,164,104[4]	1,085,885[4]	1,087,397[4]	999,253[4]
Argentina	1,138,500	1,153,500	1,140,000	1,051,000	1,210,300	1,181,500	1,180,000[1]	1,180,000[1]	1,180,000[1]	1,180,000[1]	1,180,000[1]
Peru	976,931	806,785	942,940	988,766	1,807,565	1,750,206	1,183,527	1,284,726	1,035,338[1]	970,427[4]	998,066[4]
Trinidad	815,439	778,842	839,857	834,876	816,080	772,626	759,076	780,929	755,676	818,184	788,970
British India	732,894	669,617	761,302	708,703	729,669	741,244	700,000[1]	700,000[1]	700,000[1]	700,000[1]	700,000[1]
Poland	338,100	299,845	329,224	318,619	326,900	326,830	336,553	332,934	315,000	320,000[1]	309,624
Sarawak	180,320	194,166	214,984	196,595	203,385	184,250	196,756	194,327	182,602	186,431	176,750[1]
Japan and Taiwan[1]	195,000	195,000	195,000	195,000	195,000	195,000	195,000	195,000	195,000	195,000	195,000
Egypt	136,451	126,861	131,964	124,103	138,348	137,620	136,752	143,836	133,903	125,786	128,800[1]
Ecuador	133,912	119,345	128,504	121,647	128,226	141,640	147,889	148,467	139,826	141,379	133,591
Canada	82,778	73,087	87,218	84,974	89,754	113,447	99,510	100,602	97,342	97,132	108,304
Germany[3]	130,732	121,835	141,183	129,591	134,666	130,200	141,414	153,174	155,778	160,951	157,808
Iraq[1]	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
France[1]	46,000	46,000	46,000	46,000	46,000	46,000	46,000	46,000	46,000	46,000	46,000
Others[1]	36,000	36,000	36,000	36,000	36,000	36,000	36,000	36,000	36,000	36,000	36,000
Total	102,727,529	99,099,348	116,850,537	106,481,686	128,744,212	126,682,633	128,473,388	130,866,140	123,238,421	122,289,449	114,296,750

[1] Estimate. [2] Anglo-Persian Oil Co. figures revised; fuel oil returned to the ground has been deducted. [3] Thuringea estimated 7,000 bbl.; official figure for Prussia. Sakhalin Russian included with Russia. Sakhalin Japanese included with Japan. [4] International Petroleum Company's figures.

Comparison of crude oil production in the United States, all other countries and total for the world during the first ten months of 1933 and corresponding periods of 1932 and 1931.



Official Figures for 1931, 1932 and First Eleven Months of 1933

Country	Total 1931	Daily Average 1931	Total 1932	Daily Average 1932	Total 11 months 1933	Daily Average 11 months 1933
United States	851,081,000	2,331,729	785,159,000	2,145,243	826,814,000	2,475,500
Russia	156,342,900	428,336	149,719,000	409.070	136,311,000	408,116
Venezuela	120,343,104	329,707	119,596,512	326,766	109,629,098	328,231
Roumania	46,333,945	126,942	50,491,205	137,954	46,456,200	139,090
Persia	40,253,486	110,283	45,122,455	123,285	45,159,184	135,207
Mexico	33,038,853	90,517	32,802,285	89,624	30,645,624	91,753
Netherland India	32,818,346	89,913	39,584,027	108,153	35,097,879	105,083
Colombia	18,237,190	49,965	16,384,956	44,768	12,161,522	36,406
Argentina	11,709,759	32,081	13,166,900	35,975	12,774,800	38,247
Peru	10,102,116	27,677	9,899,266	26,026	12,745,277	38,159
Trinidad	9,743,763	26,695	10,023,780	27,387	8,760,555	26,229
British India	7,830,101	21,452	8,600,312	23,500	7,843,429	23,483
Poland	4,397,760	12,048	3,905,230	10,670	3,553,629	10,639
Sarawak	3,338,472	9,146	2,274,043	6,213	2,110,566	6,320
Japan and Taiwan	1,884,285	5,135	2,340,000	6,393	2,145,000	6,422
Egypt	1,845,938	5,057	1,742,370	4,760	1,464,424	4,384
Ecuador	1,750,633	4,796	1,573,857	4,300	1,484,426	4,444
Canada	1,583,339	4,337	1,054,373	2,880	1,034,148	3,096
Germany	1,778,602	4,873	1,824,019	4,983	1,557,332	4,662
Iraq	1,200,000	3,300	1,200,000	3,300	1,100,000	3,290
France	512,862	1,405	552,000	1,508	506,000	1,513
Others	338,700	930	432,000	1,180	396,000	1,185
Total	1,356,465,154	3,716,343	1,297,447,590	3,544,940	1,299,750,093	3,861,526

UNITED STATES

	Daily Crude Oil Production bbl.	Daily Runs to Stills bbl.	Motor Fuel Stocks bbl.	Imports for week bbl.	California Shipm. East for week bbl.
Week Ending Nov. 18....	2,329,000	2,345,000	53,900,000	1,006,000	576,000
	404,000*				
Week Ending Nov. 25....	2,269,000	2,360,000	53,730,000	562,000	362,000
	417,500*				
Week Ending Dec. 2.....	2,214,500	2,245,000	53,390,000	824,000	713,000
	419,900*				
Week Ending Dec. 9.....	2,390,900	2,192,000	51,710,000	473,000	778,000
	473,100*				
Week Ending Dec. 16....	2,413,600	2,330,000	52,062,000	902,000	723,000
	460,300*				
Week Ending Dec. 23	2,321,200	2,355,000	53,000,000	928,000	506,000
	437,600*				

Underlined figures indicate improvement in statistical position—decrease in production, runs to stills, gasoline stocks and imports.
*** Production of the Rusk-Gregg field, East Texas.**

Exports Increase

DURING OCTOBER, 1933, total imports of all petroleum products into the United States declined to 2,858,000 bbl., 92,000 bbl. per day, as compared with 2,920,000 bbl., 97,250 bbl. per day, imported in the preceding month, and 5,351,000 bbl., 173,000 bbl. per day, imported in August, 1933. Therefore during October the importers continued to import within the limit of 108,400 bbl. per day set by the Federal Petroleum Administrator, Harold L. Ickes.

Exports of all petroleum products, including motor fuel, in October, 1933, increased sharply over the preceding month, reaching 10,440,000 bbl., as compared with 8,189,000 bbl. exported in September, and 29.9 percent above the total exports in October of 1932. Motor fuel exports similarly increased in volume in October, 1933, reaching 2,641,000 bbl., as compared with 1,875,000 bbl. exported in September, 1933, an increase of 40.8 percent; and 11.0 percent above motor fuel exports in October of 1932. Exports of crude oil from the United States further increased during October, 1933, to 3,888,000 bbl., constituting 37.25 percent of the total exports of all petroleum products.

The devaluation of the United States dollar during December was at least temporarily arrested, and the dollar fluctuated at around 60 to 65 cents in terms of gold currencies. The devaluation was undoubtedly an important factor in increasing shipments from the United States, and they are expected to show further gains during November and December of 1933.

Refinery Runs Under Federal Control

CRUDE OIL and natural gasoline production during November, 1933, averaged about 2,410,000 bbl. per day; 143,000 bbl. per day under production in October, 1933; 294,000 bbl. per day under production in September, 1933; but still 200,000 bbl. per day in excess of crude oil and natural gasoline production during November of 1932. Further recession in domestic production was recorded late in November and early in December, when crude oil and natural gasoline output dropped to around 2,315,000 bbl. per day, but that favorable statistical position was not sustained, the production again increasing to about 2,500,000 bbl. per day in the two weeks ending December 9 and 16, or about 200,000 bbl. per day in excess of the December allowable permitted by the Federal Petroleum Administrator. Natural gasoline production in the United States approximates 100,000 bbl. per day, and is not included in the federal quotas.

Total stocks of all oils decreased 5,395,000 bbl. during October, 1933, to a total of 613,297,000 bbl., indicating a daily gross decline in stocks of 174,000 bbl.

On November 22, 1933, the Planning and Coordination Committee, acting under authority granted it by the Federal Petroleum Administrator on October 19, issued a recommendation allocating motor fuel production and motor fuel stocks by refining districts, thus, in fact, ordering a reduction in the crude oil runs to stills. The order of the Planning and Coordination Committee fixed the figures for gasoline production in each refining district as indicated in the accompanying table for November and December.

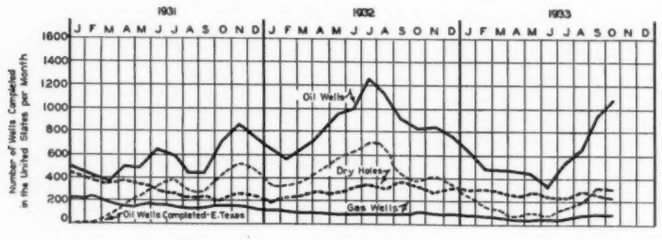
Refining companies are requested to contribute their full share to the attainment of the gasoline inventory levels prescribed in the order of the oil administrator set forth above, and to restrict production to the limits indicated in the accompanying table. Regional committees are requested to enforce this order. Any refiner whose production of gasoline in the refining district in which he operates exceeds the amount represented by the percentages listed in this order applied to his own shipments shall notify the Planning and Coordination Committee at Washington and the chairman of the regional or state refining subcommittee within his region within seven days from date of this order, such notice to be followed immediately with reasons and full historical data. It was resolved that the stocks of gasoline at refineries, in bulk terminals, in transit, and in pipelines for the entire United States on March 31, 1934, should not exceed 52,500,000 bbl. Further orders will be issued from month to month.

The actual crude oil runs to stills, however, after declining to the low figure of 2,192,000 bbl. per day for the week ending December 9, increased again in the following week to 2,341,000 bbl. per day, or approximately 200,000 bbl. per day above the limit set by the Planning and Coordination Committee. Consequently motor fuel stocks at refineries, at terminals and in transit by the end of December, 1933, are likely to reach 52,500,000 bbl., or 1,500,000 bbl. above the limit set in the order of the Federal Petroleum Administrator. The resulting uncertainty in the eventual enforcement of this federal order necessarily affected the refinery market quotations, which continued weak throughout December.

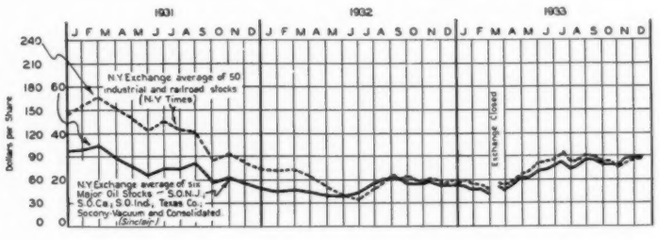
Motor Fuel Demand Steadier

INDICATED domestic demand for motor fuel during October, 1933, averaged 1,064,000 bbl. per day, a decline of 5.52 percent under the daily average during September, 1933;

U. S. drilling; comparison of oil wells, dry holes, and gas wells.



Six major oil stocks in relation to 50 industrial stocks on the New York Stock Exchange.


1931
1932
1933
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
Dollars per Share
240
210
180
150
120
90
60
30
0
60
40
20
0
N.Y. Exchange average of 50 Industrial and railroad stocks (N.Y. Times)
N.Y. Exchange average of six Major Oil Stocks — S.O.N.J., S.O.Ca., S.O.Ind., Texas Co., Socony-Vacuum and Consolidated (Sinclair)
Exchange Closed

6,460 bbl. per day above the domestic motor fuel consumption in October of 1932, an increase of 0.61 percent; and 91,100 bbl. per day under the domestic motor fuel consumption in October of 1931, the peak year, a decline of 7.89 percent. Domestic motor fuel consumption therefore indicates that the marked rate of improvement in demand over the corresponding months of 1932, noted during the past summer, is gradually losing ground dropping off from 4.02 percent in August to 1.00 percent in September and to 0.61 percent in October. The present indications suggest the continued maintenance of the domestic motor fuel consumption at levels very close to those of 1932/33 winter season. The New York Times weekly combined business index which rose from 60.0 in March, 1933, to the high of 99.5 in July, 1933, and declined to 72.0 early in November, steadied somewhat during November and December, and stood at 77.1 in the week of December 16, 1933.

The daily rate of exports of motor fuel averaged 85,000 bbl. in October, 1933, 34.9 percent above the exports in the preceding month; 11.9 percent above the exports in October of 1932; but 23.0 percent under October of 1931.

Total daily demand for motor fuel in October, 1933, therefore was 1,149,000 bbl., an increase of 1.28 percent as compared with the total daily demand in October of 1932, but 9.28 percent under October of 1931, the year in which motor fuel demand was at peak.

On November 1, 1933, motor fuel stocks at refineries, terminals and in transit amounted to 53,649,000 bbl., an increase of 587,000 bbl. as compared with stocks on hand on October 1, 1933, indicating that during October motor fuel supply exceeded demand by 18,900 bbl. per day.

Markets Weaker

DURING DECEMBER crude oil and motor fuel prices remained practically unchanged from the preceding two months, but the refinery gasoline continued weak, and natural gasoline dropped 1½ cents a gallon, a decline of 28.5 percent. Tank wagon/service station prices of motor fuel remained fairly firm and unchanged in the principal consuming centers throughout December. On November 27 and 29 the tank wagon/service station prices were advanced in South California 2–2½ and 2 cents per gallon respectively by all major units thus ending the "price war," and bringing the prices to 15–17.5–19.5 cents per gallon for the competitive, regular and premium grades respectively, as compared with recent lows of 11–13.5–15.5 cents. On December 11, Atlantic Petroleum Company reduced tank wagon/service station prices in Philadelphia, Pennsylvania, and in Wilmington, Delaware, 2 to 3 cents per gallon. Service station prices per gallon for motor fuel, regular grade and including all taxes, in representative districts in the middle of December were: 18.1 cents in New York City; 17.8 cents in Chicago; 18.0 cents in Ohio; 17.5/18.0 cents in Los Angeles/San Francisco; 18.5 cents in Oklahoma; and 27.0 cents in Montreal, Canada, with 2-cent differential for the premium grade.

Refinery gasoline quotations in Mid-Continent districts weakened ¼ of a cent per gallon during the past month. On December 20 refinery gasoline was quoted at 4–4⅛ cents per gallon for 56–60 U. S. M. grade, 59.9 and below octane rating in Group 3, Oklahoma market; 60 to 64.9 octane rating, U. S. M., brought 4⅝–4⅞ cents per gallon; and 65 and above octane rating, U. S. M., commanded 5¼–5½ cents per gallon. On the East Coast, at Bayonne, the U. S. M. grade, 60 to 64.9 octane rating, was quoted unchanged at 6¼ cents per gallon (3.75 cents gold*). Gulf Coast prices for export on December 20 were weaker at 5¼–5⅜ cents per gallon (3.2 cents gold*) for 58–60 U. S. M. grade.

Natural gasolines were greatly influenced by the accumulation of stocks of refinery and natural gasolines and the indefiniteness of the general situation, all of which resulted in the lack of demand. On December 20, grade 26–70 in Oklahoma and North Texas was quoted at 3½–3¾ cents per gallon, and in North Louisiana at 3⅞ cents per gallon, or fully 1½ cents a gallon below November prices.

Maximum Gasoline Production Fixed by P & C Committee

	Amount 42-gal. bbl.	Percent of net * shipments of gasoline out of refineries and bulk terminals, Aug.-Sept., 1933
1. East Coast	11,535,000	90.1
2. Appalachian	2,660,000	77.0
3. Ind.-Illinois-Kentucky	9,820,000	77.3
4. Okla.-Kans.-Mo.	7,990,000	77.8
5. Texas: a. Inland	4,500,000	83.3
b. Gulf	10,930,000	89.0
6. Louisiana-Arkansas		
a. N. La.-Ark.	1,200,000	79.6
b. La Gulf	2,160,000	76.8
7. Rocky Mountain	1,355,000	79.5
8. California	10,070,000	86.5
Total United States	62,220,000	

* Net shipments in this connection means total shipments out of refineries and bulk terminals less receipts at those refineries and/or bulk terminals from other refineries or bulk terminals.

Kerosene prices remained steady during December and on December 20 grade 41–43 w.w. was quoted at 3¼–3½ cents a gallon in Group 3, Oklahoma market, and at 5¼ cents a gallon (3.15 cents gold *) on the East Coast at Bayonne. Gulf Coast price for export remained unchanged at 4¼ cents per gallon (2.55 cents gold *) for 41–43 p.w. grade.

The future course of prices for petroleum products at the close of December remained as uncertain as it was during November. Declining consumption of motor fuel to or below 1932 levels is an unfavorable development, and the reduction of motor fuel production to the current demand, through reduction of crude oil runs to stills, even though decreed by the federal government is quite problematical; also motor fuel stocks are excessively large. It may be stated definitely that failing a federal control going further than issuance of various orders an acute weakness in the market quotations of all petroleum products will take place in January and February.

The federal tax of ½-cent a gallon imposed in June, 1933, will not be collected from January 1, 1934, the repeal of prohibition being directly responsible for this slight alleviation of the tax burden of the oil industry.

* U. S. dollar at 40 percent discount.

U. S. Comptroller-General, J. R. McCarl, held on December 15 that bids for government contracts including clauses guarding against further currency inflation are "indefinite and uncertain" and therefore not acceptable, thus establishing a precedent. The Standard Oil Company of New Jersey raised the issue in its bid for a contract to supply the U. S. Coast Guard Service when it included a clause that any future governmental action in reducing "the gold content of the dollar, the issue of fiat money, inflation, expansion of credit . . . shall directly increase the cost of the seller."

Federal Control Developments

WHILE SOME form of control over refinery gasoline prices, either federal or cooperative by the industry itself, appeared as inevitable in the near future, the large number of companies and individuals concerned, as well as the divergence of interests of various groups, served continuously to postpone any effective action. Federal price control in some direct or indirect form appeared after all as most likely.

The original price-fixing program of the Federal Petroleum Administrator was at least temporarily abandoned early in December when the proponents and opponents of the measure within the industry failed to arrive at any agreement or compromise. On December 7, however, the major conflicting factions of federal price-fixing in the petroleum industry, including 24 leading companies, submitted to Secretary Ickes a plan for stabilizing refinery gasoline prices by a cooperative equalization fund, whose purpose would be to keep the distress supplies from the markets. The equalization fund would be contributed to by various companies within the industry. The plan of such a National Petroleum Agency, to which, of course, only the larger oil companies could afford to contribute any capital, despite federal control, could not but result, regardless of its merits, in violent opposition from all interests within the industry not classed as major companies, as well as from politicians who make political capital of anything that may be accused of monopolistic tendencies regardless of its purpose. On December 13 and 18 Senator Borah (Rep.-Idaho) stated that the plan of major companies "would turn over the entire business to the control of a few big companies and they could wipe out every independent oil man in the United States," and that "there does not seem to be any concealment of the fact that big companies are to fix the prices and there would not be any attempt to conceal the fact as to what that would do to the consumers." On December 14 Senator Reynolds (Dem.-N. C.) attacked the plan on similar grounds and asked for a public hearing on the agreement. The Independent Oil Companies Alliance of America also vigorously protested against the plan to Secretary Ickes stating that the equalization fund pooling agreement "would create a monopoly and price-fixing inimical to the independents . . . and we urge you to hold open hearings which we feel assured will convince you of the public unsoundness of the proposed plan."

Secretary Ickes, observing the opposition of

various interests to the cooperative equalization fund, ordered on December 20 a "survey of the cost of producing crude oil, to be conducted by the Petroleum Administration Board under my direction, to obtain data necessary in the administration of the Code of Fair Competition for the petroleum industry." Two routes appeared open for the federal government to increase the prices of petroleum products early in 1934: either federal price-fixing, which perhaps is being planned and for which the cost survey has been already ordered, or vigorous and strict restriction of crude oil production and runs to stills.

The Oil Code was amended on December 23, with the approval of President Roosevelt, extending federal control into the contract drilling field. The new rulings prohibit secret contracts between companies and contractors; prohibit giving of rebates by any drilling contractors below the price specified in contracts; prohibit the submitting of contracts in such a manner as to indicate lower prices will be acceptable; prohibit receiving of crude oil in payment for drilling; prohibit paying the employees in anything but cash and prohibit submitting of contracts at prices below the fair economic cost of operation. Also special regulations were issued for labor used in drilling operations, maintaining the thirty-six hour week, but allowing forty-eight hour week provided the working week averages not more than thirty-six hours for any 26 consecutive weeks.

An interesting and healthy sequel of federal control to date under the Code of Fair Competition is the disappearance of a large number of smaller independently operated filling stations. Some surveys indicate that since last summer between 10 and 15 percent of filling stations have been closed in some parts of the United States, most of the closed stations having been operated as a side line by farmers and by people engaged in other business.

NRA Production Control

THE OCTOBER and November federal production allowable of 2,337,500 bbl. was reduced by 127,500 bbl. in December to 2,210,000 bbl. per day; and the January, 1934, allowable production was further reduced by 27,000 bbl. to 2,183,000 bbl. per day.

By December 1 the United States as a whole overproduced 2,147,000 bbl. above the federal quotas in the months of September, October and November. November production figures were very favorable, Texas, Oklahoma and Kansas reducing their accumulated overproduction very appreciably, and only California continued to produce steadily in excess of its quota, principally due to very unusual conditions existing in the Huntington Beach oil field, where producers of oil wells deflected under the state tidelands overproduce daily around 20,000 bbl. pending final settlement with the state.

The East Texas field again appeared to be producing a considerable volume of illegal and unreported crude oil, such production being currently estimated at 30,000 bbl. per day. While the Department of the Interior has increased its force in the East Texas field by 25 men, and is preparing many cases against producers and refiners for the evasion of federal orders, the suits are not likely to be tried until the Three-Judge Federal Court at Houston hands down early in January, 1934, a decision in the Amazon Refining Company et al. case.

On December 23 Secretary Ickes issued an order regulating the development of the newly discovered oil fields. The new order provides for "adequate protection of the correlative rights of all parties having an interest in the pool and for full conservation of petroleum resources to prevent the waste of irreplaceable fuel." The plans to be submitted and to be approved by the Planning and Coordination Committee and by the Federal Petroleum Administration must provide:—

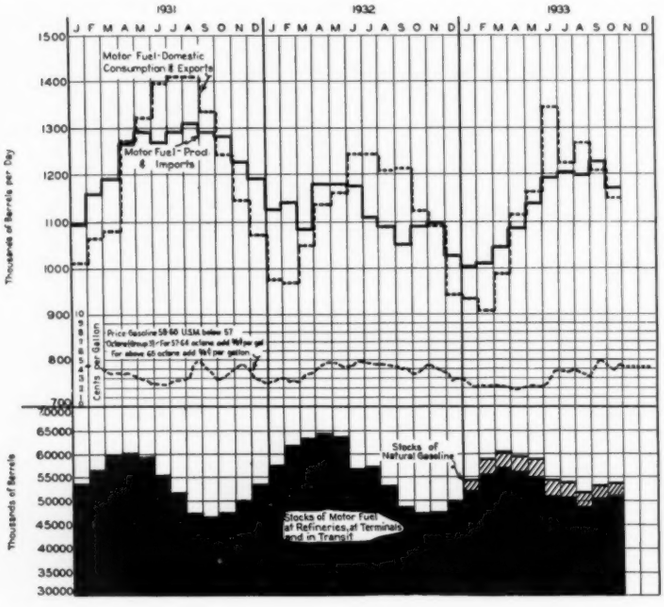
1. That it shall be effective from and after the date of approval by the Administrator until the Code of Fair Competition for the Petroleum Industry ceases to have legal effect.
2. That any and all wells hereafter drilled shall be located in accordance with a plan of well location approved by the Administrator.
3. That development shall be so limited as to avoid disruption or material disturbance of

Crude Oil Prices

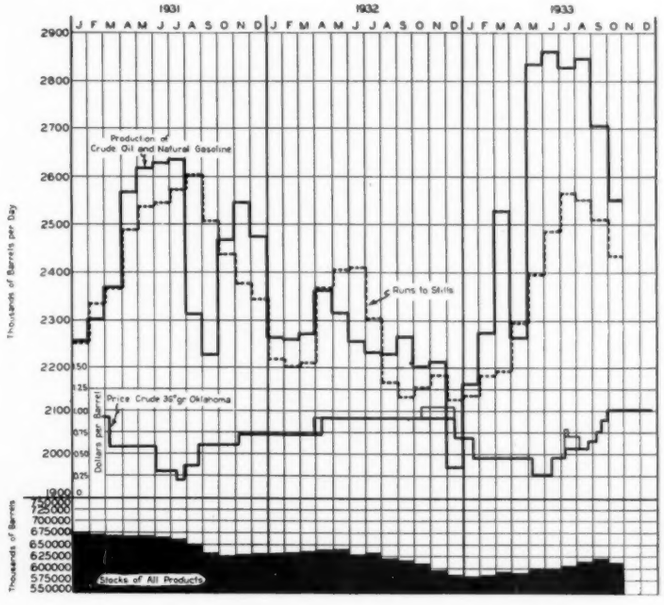
(Dollars per barrel)

		Effective Sept. 29 1933	In Terms of Gold at 40% Discount
Oklahoma, North Texas and Texas	28 deg.	$0.84	$0.50½
	36 deg.	1.00	0.60
	40 deg. top	1.08	0.64¾
East Texas	flat	1.00	0.60
West Texas	flat	70–75	0.43½
Gulf Coast	25 deg.	0.94	0.56½
	30 deg.	1.04	0.62¼
	34 deg.	1.008–1.12	0.66
	40 deg. top	1.12–1.14	0.67¾
Conroe	36 deg.	1.11	0.66½
	40 deg. top	1.19	0.71½
Gray County, Texas	40 deg. top	0.91	0.54½
Smackover, Ark.	flat	0.70	0.42
Rocky Mountains:			
Salt Creek	36 deg.	1.00	0.60
Elk Basin	flat	1.18	0.70¾
Pennsylvania:			
Bradford Distr.	flat	2.45	1.42
Eureka Lines	flat	2.07	1.24
Mt. Pleasant, Michigan	flat	1.02	0.61¼
		Effective Sept. 6 1933	
California:			
Santa Fe	34 deg.	1.19	0.71½
Kettleman Hills	39 deg.	1.11	0.66½

U. S. consumption and exports, production, imports and prices of motor fuel in relation to motor fuel stocks.


1931
1932
1933
J F M A M J J A S O N D
Motor Fuel-Domestic Consumption & Exports
Motor Fuel-Prod & Imports
Price Gasoline 58-60 U.S.M. below 57
Oklahoma 31-For 57-64 octane add 1/4¢ per gal
for above 65 octane add 1/4¢ per gallon
Cents per Gallon
Thousands of Barrels per Day
Stocks of Natural Gasoline
Stocks of Motor Fuel at Refineries, at Terminals and in Transit
Thousands of Barrels

U. S. production, runs to stills and price of crude oil in relation to stocks of all petroleum products.


1931
1932
1933
J F M A M J J A S O N D
Production of Crude Oil and Natural Gasoline
Runs to Stills
Price Crude 36° gr Oklahoma
Dollars per Barrel
Thousands of Barrels per Day
Stocks of All Products
Thousands of Barrels

the interstate or foreign market for petroleum or the products thereof from existing fields, and that the Administrator may, at any time, take such steps as he deems necessary to achieve this end.

4. That production shall not exceed the allowable quotas set by the proper state regulator body, or the Administrator, and / or any agency designated by him and that for the purpose of more properly conserving the natural resources of the pool, the production of oil and gas therefrom.

(a) Shall at all times be without waste as defined by the law applicable;

(b) Shall be limited to such production as can be put to beneficial use with due regard to the avoidance of inferior uses; and,

(c) Shall be limited so that gas will not be unduly wasted in or for the production of oil.

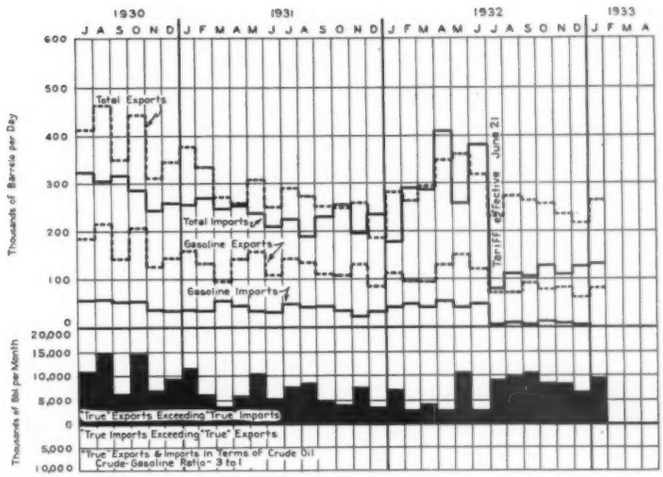
The first application of the new order regulating the development of new pools is anticipated in the case of the Lucien oil field, in Central Oklahoma, the preliminary hearings on which were held late in December before the Petroleum Administrative Board in Washington, D. C.

NRA in Courts

ON DECEMBER 1 the government's first criminal prosecution under the NRA ended successfully when Judge Clarence G. Galston fined the Hercules Filling Stations, Inc. $300 for working their employes 66 hours a week instead of 44 hours as provided in the retail section of the Petroleum Code. In this minor case, however, the defendants pleaded guilty.

Early in December Jim Lieto, a filling station operator of Dallas, Texas, was arrested, and subsequently released on $1,000 bond, on a charge of selling gasoline at a cut-throat price.

On December 14 a Three-Judge Federal Court in Houston, Texas, began trial of seven important suits attacking the validity of the NRA and of the Texas proration orders, said to have been issued at the direction of the Federal Petroleum Administrator. This test case has been named the Amazon Petroleum Corporation's suit, but six similar suits are consolidated with it. The suit has been filed against members of the Texas Railroad Commission, against State Attorney General J. V. Allred and against all state and federal agents in charge of proration enforcement in the East Texas field, alleging the NRA unconstitutional, and therefore holding the Petroleum Code and orders under it to the Texas Railroad Commission invalid. An opinion on the Amazon Petroleum Corporation's suit, which is considered of primary importance, not only to the oil industry but also to the codes of all other industries, will be handed down by the Court after January 4, 1934. Regardless of the decision in Texas Federal Court the case eventually is expected to be passed to the Supreme Court of the United States, requiring a considerable period of time.



Total U. S. imports and exports and gasoline imports and exports in relation to true exports exceeding true imports.

Anderson-Leon Counties East Texas

THE RECENTLY most active leasing area in Texas, in Freestone, Anderson and Leon Counties, between the Mexia pool and the south end of the Rusk-Gregg pool proved to date most disappointing, and expensive to the companies which participated in the play given this area.

The discovery well, the Tide Water and Texas Seaboard Oil Companies' No. 1 Monning, Long Lake Plantation, located in Anderson County near Palestine was completed as a non-commercial producer for but 200 bbl. of oil and 100 bbl. of salt water per day from the Woodbine sand at 5,147–5,290 ft. Subsequently Humble Oil and Refining Company (S.O.N.J.) completed as a dry hole its No. 1 H. R. Deitz, 2½ miles north-northwest from the discovery well and in Freestone County, testing salt water in Woodbine sand at 5,327 ft. and abandoning the well at 5,590 ft. Also the Tide Water and Texas Seaboard Oil Companies' No. 2 and No. 3 Monning, 1,800 ft. due west and 4,000 ft. due southeast from the discovery well respectively, were correlating low and were looking like failures at the end of December; No. 2 drilling at 5,341 ft. without any shows and No. 3 drilling at 5,000 ft.

Crescent—Central Oklahoma

IN THE RECENTLY discovered Crescent pool in Logan County two additional oil wells were being completed late in December, Mid-Continent Petroleum Company's No. 1 Campbell and The Texas Company's No. 1 Denny, both wells correlating very high, and therefore expected to be completed for around 5,000 bbl. per day each. The two new completions extend the Crescent field ½ mile to the south.

Michigan

THE OILFIELD developments in Michigan continued to gain momentum throughout 1933, and in December some of the most promising and important events occurred.

A new field was discovered in the first week of December in Montcalm County, about 12 miles south from Broomfield gas pool, and 22 miles southwest from the Mt. Pleasant pool. The discovery well, the Daily Oil Company's No. 1 H. P. Christensen, in section 10–T12N–R6W, was completed for about 175 bbl. of 44 gravity crude oil per day in the Traverse limestone at from 3,025 to 3,085 ft. About 1,000,000 cu. ft. of gas accompanied the oil flow, suggesting excellent possibilities.

In the recently discovered Ogemaw field the Pure Oil Company completed the first large well in its No. 1 A. Reinhardt, in section 35–T22N–R2E, which came in for about 2,400 bbl. per day from the Traverse limestone at 1,711 to 1,721 ft.

In the Porter field, discovered early in the year, the Pure Oil Company completed its No. 2 W. W. Hoyt, in section 17–T13N–R1W,

Effect of Federal Production Orders on Principal Oil Producing States

(in barrels)

	Sept./Oct./Nov. Cumulative Position		December Federal Quota	Daily Average Production per Week Ending		
				Dec. 2 (2 days)	Dec. 9	Dec. 16
Texas	over	422,000[1]	888,000	902,000	965,000	952,000
Oklahoma	under	239,000[2]	457,000	421,500	501,500	550,000
California	over	821,000[3]	450,000	465,000	504,000	497,000
Kansas	over	138,000[4]	112,000	114,500	109,000	107,000
United States	over	2,147,000	2,210,000	2,214,500	2,391,000	2,414,000

[1] Texas reduced September/October overproduction by 1,400,000 bbl. in November.
[2] Oklahoma cancelled its September/October overproduction of 141,000 bbl. and is now underproduced 239,000 bbl.
[3] California increased September/October overproduction during November from 581,000 bbl. to 821,000 bbl.
[4] Kansas reduced September/October overproduction by 60,000 bbl. in November.

for the largest well yet drilled in Michigan. No. 2 Hoyt came in for a flow of 25,000 bbl. per day from 3,435 ft. in the Dundee limestone, but on subsequent tests developed 40 percent salt water, a rather typical behavior of wells in Porter field unless produced under most conservative conditions.

BASIL B. ZAVOICO

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UNION SOVIET SOCIALIST REPUBLICS

Official Figures For Soviet Oil Operations

	Crude Production (Bbl.)	Daily Average (Bbl.)	Run to Stills (Bbl.)	Drilling (Feet)
January	10,382,400	334,917	9,510,900	157,486
February	10,162,600	362,950	9,167,900	169,396
March	11,003,300	384,800	11,003,300	228,532
April	11,824,400	394,150	10,472,700	228,790
May	12,794,600	412,729	11,834,900	213,744
June	12,489,400	416,313	11,641,700	198,729
July	11,837,000	394,567	10,887,800	214,385
August	13,402,200	432,329	11,707,500	236,200
September	14,340,900	478,363	11,481,400	306,414
October	14,595,000	470,800	11,648,000	293,667
November	13,479,200	449,307	10,651,200	272,180
Total 11 Months 1933	136,311,000	408,116	120,007,300	2,277,163
Total 11 Months 1932	138,817,400	414,380	134,610,782	2,274,293
Revised Quota 1933	170,800,000	467,670	155,000,000	3,315,000

Crude oil conversion ratio: 7 bbl. = 1 ton.

Reorganization

AN EXTREMELY important reorganization of the Russian oil industry is being effected at present and will result in the creation of a separate trust controlling all refining plants of each trust. Another trust will be organized and placed in charge of all exploratory drilling no matter which local trust is in control of the fields in which this drilling is undertaken. Thus, the refining and exploratory drilling in the Baku region will be under the control of central trusts, rather than the exclusive control of Azneft. The same effect will be produced in the responsibility of all other trusts.

M. Barinoff, former head of Azneft, and generally considered one of the best informed men in Russia on the entire Soviet oil industry has been made head of Soyusneft and will exercise direct control over the entire Russian oil industry. M. Peterson will be placed in charge of Azneft and M. Slutsky, former representative of Soyusnefteexport in the United States, will be placed at the head of the central refining trust in charge of all Russian refineries.

More details of this important reorganization of the Soviet oil industry will be available in subsequent issues.

Storms at Baku

OPERATION of the Soviet oil industry has experienced even more than the usual seasonal decline due largely to extremely bad weather. While some slowing down at this time of year is anticipated as a result of difficulties in transportation during the winter months, it was impossible to foresee the terrific blizzard that raged for two days at Baku bringing operations almost to a standstill and finally leaving a considerable amount of damage. During the first ten days of November, Azneft maintained production at over 385,000 bbl. daily but during the remainder of the month, when the flow from Lok Batan No. 37 dropped off, production was reduced to 345,000 bbl. Azneft, however, succeeded in fulfilling the plan 91 percent for the month which constituted a much better record than any of the other trusts. Average for the whole month at Azneft was 346,122 bbl. daily against 361,179 bbl. daily during October.

The Moscow press charged that Baku was completely unprepared for the blizzard that swept over the oil fields and therefore the damage was somewhat greater than it would have been had proper precautions been taken in advance. Drilling rigs were wrecked and several days were required to restore complete order.

"Gusher psychology" referred to in these notes last month is becoming a growing menace at Lok Batan. The local authorities seem determined to develop only the largest flowing wells and neglect to build up a reserve of wells producing on pump. During the latter half of November this condition resulted in a noticeable dropping off in production. Since the close of navigation there has also arisen a feeling that some relief from the strain under which Azneft has been working recently should be allowed. Quotas were set for Azneft "before the close of navigation" and every department worked under a great strain in maintaining production at and above the original quota. Baku was called upon to supply the deficiencies of Grozni, Maikop and the other fields. During November a noticeable change in the temper of the workers evidenced itself in a slackening of the work finally resulting in decreased tempo of operations.

In view of the fact that the Soviet oil industry depends on Azneft to supply crude and refined products for by far the greater part of domestic and export requirements and that crude from Baku has been piped to Grozni to keep the Grozni refineries running near capacity, the present decreased tempo of Baku production is a matter for alarm in Moscow. It is not to be expected that much will be done before the end of 1933 to improve production, but already Azneft has done extremely well. Crude production of Azneft has increased 22 percent over last year. It now appears impossible for Azneft to make up entirely the arrears of the entire industry before the end of the year; but this trust has done much to assist in this direction.

Declines Checked at Grozni

UNDER THE direction of K. Riabovol, as predicted in WORLD PETROLEUM, the declining production of Grozni has been checked. While the new régime at Grozni has not been in control long enough to send the curve of crude production upward again, it has stabilized production and established the fact that Grozni reserves are more than sufficient to fulfil the quota for this trust under efficient management. A State Commission reporting the result of its investigation of Grozni stated that the former management offered as an excuse for its own inefficient control the report that the reserves of Grozni were becoming exhausted. During the first 11 months of 1933 arrears at Grozni had been built up to 11,000,000 bbl.

The October group of Grozni fields, the main resource of the trust, has brought production up to a point equal to the requirements of the plan during October and November. Drilling has been increased, at least in regard to footage, although the quality of the drilling work still leaves much to be desired.

Obviously, it is going to take some time to liquidate the arrears built up under the former management; but all reforms at Grozni are progressing satisfactorily and considerable improvement in production and refining at Grozni may be looked for before the middle of next year. During October, for example, the

footage drilled in the "October" region shows 100 percent plan fulfilment. The quality of the drilling leaves much to be desired, however, not a single producing well having been completed in this area during the month.

Construction

A DIFFICULT situation for the Maikop trust has been created by an order from the Commissar for Heavy Industry, which called for the construction of a railroad from Apsheronsk to the Khadizi (Maikop) field at Benoi. The Commissar also directed that a highway and pipeline with pump stations and repair shops should be constructed and housing facilities erected for the labor required in this field. These orders were designed to make possible a production of at least 1,500,000 bbl. of crude from the Benoi field by the end of 1933.

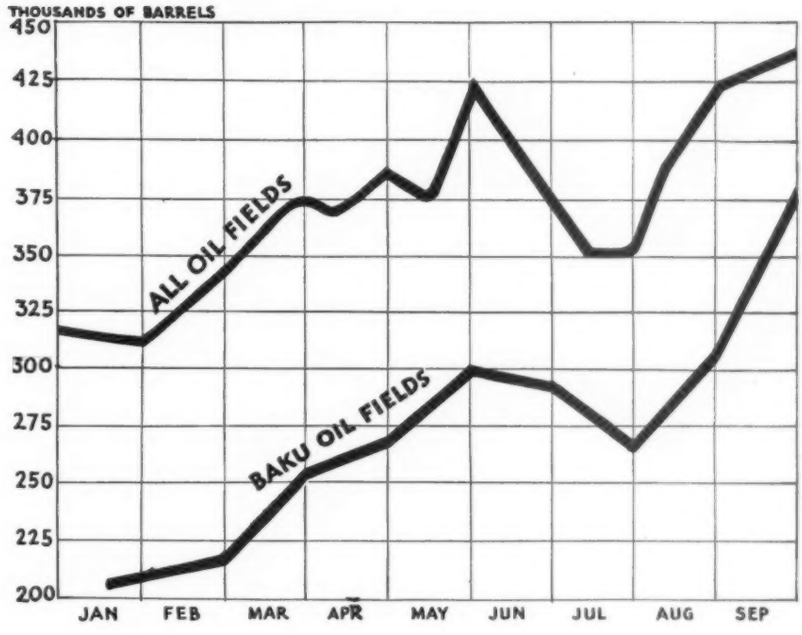
Unfortunately the officials of Maikop were taken unawares by this order. The region in which the field is located is practically inaccessible, mountainous, and without adequate housing facilities. No action was undertaken to comply with the orders from the Commissar and recently equipment and supplies of all sorts arrived at Khadizi station and is being stored in the open while efforts are being made to make the field and right-of-way ready for the construction that is expected by the Commissar. Lumber, concrete, fibrolite, material for standard house, rails and pipe are piling up along the railroad and disintegrating in the weather. So far, it has been impossible to transport this material to the point where it is to be used. Horses have been acquired to clear a road to the field but no drivers are available because of the lack of housing. Meanwhile, no houses can be erected because the material is stored along the railroad and cannot be transported to the field. Pumping equipment has arrived but the rotary drilling rigs have been delayed and hence no wells are prepared for pumping. Resolving this complicated situation will probably take several months.

At Baku loading racks are being constructed, a 7 km. railroad will be laid, and work is progressing on the pipeline which will increase its capacity from 2,600,000 tons per year to 3,300,000 tons. This work will be completed by June or July 1934. The Caspian tanker fleet will be increased in capacity 3,500,000 tons making a total carrying capacity for this fleet of 13,500,000 tons. Work on the harbor facilities at Baku is underway. By spring transportation facilities will be increased by land and sea in order to accommodate the increased amount of crude and refined products that are expected to be produced at Baku for export and for supplying the domestic market.

Oil from Russian Coal

COAL FROM the Lenin coal mine in the Kusnetzk area has been refined into synthetic gasoline at what is stated to be an economical cost. On December 3 automobiles using this fuel raced between Novosibirsk and Kemerowo. The performance of the automobiles on the new fuel was said to be satisfactory in every respect.

A special commission which has been studying this subject reported favorably on the possibilities of commercial production of this synthetic motor fuel and suggested that it be greatly extended.



Relative position of the production of Azneft to the production of all Russian oil trusts including Azneft.

Invention

M. KAPELIUSHNIKOV has collaborated with M. Zalkin, a young Soviet engineer, in the invention and development of a drilling machine known as the "Dispatcher." The Dispatcher consists of a control device to perform the work of drilling by compressed air and it is hoped that it will reduce the number of men necessary in drilling crews. The operator can stand at some distance from the rig and operate levers which are connected to compressed air cylinders by air lines. These cylinders are mounted on the rig itself. Several practical tests have been performed and are said to prove the value of the invention in reducing the amount of labor necessary, preventing damage, loss of instruments and crooked holes. M. Kapeliushnikov is well known for his invention of the turbo drill and various refining processes.

J. WEGRIN.

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French Commission Rejects Monopoly

AT A MEETING held on Dec. 1 the special commission appointed early in 1933 to study the project of a government oil monopoly in France declared itself against the monopoly proposal by a vote of 15 to 7. This ends, for the time being at least, the agitation for state operation of oil importation and refining which at one time developed such strength in the Chamber of Deputies that it seemed likely to find early adoption.

While preponderantly against the setting up of a state monopoly the commission decided to give further consideration to proposals submitted by M. Poisson, vice president of the National Economic Council, for the establishment of national companies to handle importation and refining of petroleum. These companies would be similar in organization to the Compagnie Generale Transatlantique and Compagnie Air-France, the latter of which recently consolidated all the commercial air activities of the country. The government would have a 33 percent interest in each company. It is considered unlikely, however, that action along this line will be taken.

Foreign Oil Legion

James Kewley, chief-chemist, Asiatic Petroleum Company, Ltd., was unanimously selected president of the Oil Industries Club, London, at the annual general meeting, December 12th. The Oil Industries Club has a membership of 225, and meets for an informal luncheon the first Tuesday of each month, when economic or technical talks are given on subjects pertaining to the petroleum business. These luncheons are very popular as well as illuminating, and serve the useful purpose of bringing together men associated with, or allied to, the oil industry in a social way. When the World Petroleum Congress was held in London last July, of which Mr. Kewley was chairman of the committee, the Oil Industries Club held a conversazione and dance attended by about 350 persons.

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E. M. Smith will assume the position of president and general manager of Emsco Derrick and Equipment Company of Los Angeles, California, effective January 1, 1934. Mr. Smith organized the Emsco Company in 1923 to produce all steel petroleum production equipment, one of the best known features of which is the Emsco all steel derrick. Since that time the company has expanded and now produces a complete line of all kinds of steel production equipment. After a personal survey of the operations of the company, Mr. Smith announced that there would be various changes in the personnel and that the company would adopt an aggressive policy in expanding its business.

E. M. Smith

Wilson Cross, chairman of the Vacuum Oil Co. Ltd., London, is on a visit to New York. He crossed on the s.s. Manhattan.

Gordon Michler, managing director, Standard Franco-Americaine recently arrived in New York from Paris.

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Basil Jackson, representative of the Anglo-Persian Oil Company in America, has returned to New York after some months spent in England.

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Dr. E. Jamieson, principal medical officer of the Anglo-Persian, has returned to Persia from leave in Great Britain.

James Kewley

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Shipping

Contracts for all twelve of the Anglo-Saxon tankers have now been let and work is in hand in the shipyards. The distribution of the orders on the whole has been an extremely fair one. Four ships have gone to England, three ships to Holland, three to Germany, one to Denmark and one to Italy. The Danish contract is of particular interest since this is the first time that the Anglo-Saxon Company has placed one of its modern motor tanker units with a Danish yard. Actually the German Shell Company, the Rhenania Ossag, for example, will spend some 2,000,000 Rm. in three German yards (Deutsche Werft, Bremer Vulcan and Howaltswerke) on units of its new programme of twelve ships. Each of the German ships will provide work for between 900 and 1,000 men. It is interesting also to note, finally, that Shell interests have since 1924 spent for ships, engines and materials in Germany a sum of no less than 150,000,000 Rm. Further work of this nature will be eagerly looked for, even though the general shipbuilding situation is definitely improving. It is more or less an open secret that the contracts which have been just let form the vanguard of an imposing building programme which the Anglo-Saxon Company will carry

out during the next ten years or so. As far as the immediate future is concerned the Eagle Oil Company is known to be in the market for two ships of modern motor type. This company has hitherto only built steamers and has not actually been in the market for four or five years. Their fleet today which consists of 33 vessels can by no means be regarded as up-to-date. It is understood that the new vessels will resemble the Anglo-Saxon ships in practically every detail.

Before the construction programme of which all these units form a part was finally decided on, calculations were made, based upon the use of the most modern and economical type of internal combustion engine, as to the exact freight rate at which such ships could operate at a profit. It was found that the new Anglo-Saxon design could make money at a rate at which other tankers and even less economical proposals could not even cover costs. The secret of success in this direction lies largely with Mr. C. Zulver, the company's superintending engineer, who has undoubtedly reduced tanker operation to a very fine art, by close attention to detail, by complete standardization of engine type and by an appreciation of the commercial possibilities of continuous supercharge as applied to the 4-cycle engine. It may be said in fact that at one stroke of the pen Mr. Zulver, by his new programme, may render obsolete the majority of such charter tankers, both those in commission and those which are still completing.

As clean or dirty oil carriers, they leave little to be desired. As ships of propulsively economical type they are too slow and, even as motorships, too expensive in the fuel item. Many of their charters are falling due for renewal. Will they find themselves unemployed at the expiry of their charter? Will reconstruction be necessary and re-powering be part of the programme? New fore-ends may be necessary for some ships, and in most of the 4-cycle engined ships some form of continuous supercharge must be fitted.

Messrs. Davies and Newman, oil and steamship brokers, have recently issued statistics which definitely reflect a greater spirit of confidence in the industry. Laid up tanker tonnage shows a continuous diminution, although it is noteworthy that the majority of ships which are obtaining freights at this time are of motor driven type. Laid-up tanker tonnage reached its peak in July–August of 1932 and has steadily decreased since then.

Laid-Up Tanker Tonnage

	Vessels	Cargo Tons
August 1932:		
American	105	1,030,857
Others	246	1,926,200
Total	351	2,957,057
December 1932:		
American	97	879,571
Others	210	1,676,950
Total	307	2,556,521
December 1933:		
American	40	346,500
Others	145	1,091,600
Total	185	1,438,100

A. C. HARDY

British Imports Advance 9.6%

BRITISH IMPORTS of petroleum and its products for eleven months to November 30, 1933 amounted to 64,160,489 bbl. compared with 58,512,655 bbl. for the corresponding period of 1932. The increase is equivalent to 9.6 percent, against an advance of 7.5 percent on the figures as they existed at the end of October and a 6 percent expansion against 1932 at the end of July.

Motor spirit, lubricating oil and fuel oil retain their places as the categories contributing most of the improvement.

Explanation of the widening of the percentage increase for the eleven months against the 1932 figures is afforded by the heavy import total for November. Although compared with October 1933, November showed an appreciable decline in inward shipments, imports that month were no less than 37.8 percent above those for November 1932.

After every allowance has been made for changes in the incidence of tanker arrivals, this big advance in receipts, following the sustained expansion over previous months, shows unmistakably the upward trend of British petroleum import business, which is doubtless due largely to increased industrial and transport activity and to some extent to extension in the use of petroleum as a motive power.

The subjoined table shows November imports, with an eleven months comparison with 1932.

British Oil Imports by Products

(Barrels)	November 1933	Eleven months to Nov. 30 1933	Eleven months to Nov. 30 1932
Lamp oil	555,955	4,657,491	5,267,482
Motor spirit	1,834,786	28,525,629	25,478,488
Other spirit	57,423	414,233	435,435
Lubricating oil	170,893	2,724,908	2,272,564
Gas oil	269,854	2,837,551	2,540,440
Fuel oil	1,304,361	14,588,706	12,830,941
Other sorts	3	7,222	18,608
Total products	4,193,275	53,755,740	48,843,958
Crude	1,149,692	10,404,749	9,668,697
Total imports	5,342,967	64,160,489	58,512,655

CANADA

General

ABNORMAL climatic conditions seriously interfered with shipping at the port of Montreal toward the end of the season, but in spite of this, a greater tonnage of petroleum and its products was handled than in 1932. Up to the end of October nearly 10,500,000 bbl. of crude had been discharged at the eastern end of the harbor by tankers arriving from South America and the West Indies.

Imports Through Port of Montreal to October 31

(Barrels)

	1932	1933
Crude Oil	8,835,771	10,447,759
Gasoline	1,095,560	785,264
Refined Oil	47,542	168,450
Total	9,978,873	11,401,473

These figures represent an increase in crude oil imports to the end of October of 2,611,988 bbl., an increase in refined oil imports of 120,908 bbl., and a decrease in gasoline imports of 310,296 bbl.

Production

THE TREND of crude production in Canada, small though it be, is upward. Production for October is reported 107,045 bbl. compared with 97,342 bbl. in September, and 78,845 bbl. in October, 1932. Of the October production, the province of Alberta accounted for 94,526 bbl. with 12,006 bbl. from Ontario and a small production from New Brunswick. Production for the ten month period ending October, 1933 totalled 935,757 bbl. compared with 896,425 bbl. in the similar period in 1932.

Imports

IMPORTS of crude were somewhat lower during October than during September, but were higher than in the corresponding month last year. The October, 1933 imports of crude totalled 2,620,396 bbl. compared with 3,088,492 bbl. in September and 2,384,235 bbl. in October, 1932.

Origin of October Canadian Crude Imports

Barrels	
United States	1,582,123
Colombia	501,062
Dutch West Indies	75,936
Peru	281,641
Venezuela	179,634

The total imports of crude into Canada for the twelve months ended October 31, 1933

were 25,204,992 bbl. valued at $18,193,295. compared with 27,437,332 bbl. valued at $27,571,269 during the same period ending October 31, 1932.

Gasoline imports were up compared with September, but showed the same sharp decrease compared with the month of October, 1932. Importations of gasoline during October totalled 29,349 bbl. compared with 21,653 bbl. in September, and 199,802 bbl. in October, 1932. Imports of gasoline for the twelve month period ending October, 1933 were 731,987 bbl. valued at $2,141,566, compared with 2,224,304 bbl. valued at $7,809,787 for the same period in 1932.

Total imports of petroleum, asphalt and their products amounted to $3,900,691 in October. Of this amount the United States provided 65 percent.

R. C. Rowe

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Finance

London: December

Several factors have contributed to the disappointment of hopes of continued firmness in the oil share market. Reports on the progress of the oil code in the United States have been less definitely favourable, and whatever may be the value of price fixing to the industry, the news that the schedule was not to be introduced on December 1 was certainly a disappointment to the London market. This postponement, with the decline of the dollar to a heavy discount against sterling, discouraged the hopes previously entertained of a further advance in British petrol prices. All the developments of the past month, therefore, have been against share market activity. Business has been quiet, and quotations have followed the general downward tendency of prices on the London Stock Market, practically all oil shares showing substantial declines between mid-November and mid-December. Venezuelan Oil Concessions, Lobitos Oilfields and shares of other companies selling their products on a dollar basis have been particularly depressed by the decline in United States currency. Although the market is easy, selling pressure has at no time been pronounced, and a ready response of prices to small buying movements suggests that the technical position is sound. Substantial recovery, however, seems unlikely until a further stimulus is given to the market by more good news from America.

Although Anglo-Persians have been dull with the rest of the market, the price was not affected to any extent by the decision of the company's directors to defer consideration of a dividend on the ordinary shares until the full accounts for the year are available. Recent similar decisions by the Royal Dutch and Shell boards had prepared the market for the absence of an interim payment on Anglo-Persians. This is the third successive year for which the interim dividend has been withheld. For the whole of 1932 the distribution on the ordinary shares was 7½ percent, compared with 5 percent for 1931.

Announcement of an increase of £700,000 in the nominal capital of Iraq Petroleum Company suggests the provision of further funds by the controlling groups to take care of current developments. The company, in which Anglo-Persian, the Royal Dutch-Shell group, Compagnie Francaise des Petroles, and the American owned Near East Development Corporation, each has a 23¾ percent interest,—the remaining 5 percent of capital being controlled by C. S. Gulbenkian—has made similar increases of capital during each of the past few years. The total was raised from £4,000,000 to £5,000,000 during 1931, and to £5,100,000 in March 1932. A further increase of £700,000 was announced a year ago, and the latest addition will bring the aggregate up to £6,500,000.

Closing its financial year on June 30, Anglo-Ecuadorian Oilfields, the Lobitos subsidiary, felt the full effect of depression during its last accounting period, since it was only in June last that the price of Mid-Continent crude began to respond to improved conditions in the United States industry. As a result of unfavourable prices, net profit for the year was only £55,017, against £72,669 in 1931–32, although the charge for depreciation and development was cut down last year from £185,389 to £81,477. The dividend is maintained, however, at the former rate of 3½ percent, and a small increase made in the undivided surplus to £45,242. A further improvement took place in the financial position of the company during the year, the holding of government securities increasing by £72,400 to £460,500 while the cash holding has declined by only £25,000. At the end of June the company had 391 wells in operation, 21 producers having been brought in during the year.

Steady improvement in the position of Steaua Romana (British), shown in the company's accounts, was commented upon by the chairman at the meeting last month. The annual report showed that profits for the year to June 30, 1933 were £100,800 compared with £110,014 for the preceding annual period. The dividend was increased from 4 percent to 6 percent by the addition of a 2 percent special distribution from interest received by the British company from its operating subsidiary in Roumania. A further £30,000 was transferred from last year's profits to reserve, increasing the total of the latter to £135,000 and the balance carried forward was £39,885, against £30,619 brought into the accounts. Sir Albert G. Stern, presiding at the meeting, pointed out that whereas the company's investments were represented ten years ago entirely by shares in the Roumanian company and advances to Roumanian banks, they now include nearly £400,000 of first-class British securities. Discussing prospects for the Rou-

London Stock Exchange Prices

1933 High	1933 Low	Last Year's Div. % per Ann.	Share	November 11–December 11 First	High	Low	Last	Change
2 7/32	1 5/32	3½	Anglo-Ecuadorian	1 3/16	1 3/16	1 1/16	2 3/32	– 3/32
1 11/16	1 1/16	10	Anglo-Egyptian "B"	1 23/32	1 23/32	1 17/32	1 17/32	– 1/8
2 19/32	1 3/4	7½	Anglo-Persian	2 19/32	2 19/32	2 1/4	2 11/32	– 1/4
1½	29/32	25	Apex Trinidad (5s.)	1 15/32	1½	1 3/8	1 15/32	.....
2 3/32	1 1/32	....	Attock	2 1/32	2 1/32	9/16	9/16	– 3/32
5/8	7/16	7½	Brit. Borneo (6s.)	1 7/32	1 5/32	7/16	1 5/32	– 1/16
1/4	3/16	....	Brit. Burmah (8s.)	7/32	7/32	3/16	3/16	– 1/32
5/16	5/32	....	Brit. Controlled ($5)	5/16	5/16	7/32	1/4	– 1/16
3/4	1 3/32	....	Brit. Controlled Pfd. ($5)	3/4	3/4	1 9/32	5/8	– 1/8
4 15/32	2 3/4	20	Burmah	4 17/32	4 17/32	4 1/16	4 1/4	– 9/32
1/2	1/4	....	Canadian Eagle (No par)	1 5/32	1 5/32	3/8	3/8	– 3/32
5/16	3/32	....	Kern River (10s.)	1/4	1/4	5/32	5/32	– 3/32
2 19/32	1 1/2	12½	Lobitos	2½	2½	2 1/16	2 5/32	– 1 1/32
4 5/16	3 7/16	14‖	London & Thames Haven	4 5/16	4 5/16	3 31/32	4	– 5/16
5/8	5/16	....	Mexican Eagle ($4 Mex.)	3/8	5/8	1/2	17/32	– 3/32
1 1/16	3/8	2½	Phoenix	1 1/16	1 1/16	9/16	1 9/32	– 3/32
23 7/8	15 3/8	6	Royal Dutch (fl. 100)	22 1/4	22 3/4	21 1/4	21 1/16	– 9/16
2 7/8	1 29/32	7½*	Shell Transport	2 25/32	2 25/32	2 15/32	2 17/32	– 1/4
11 3/4	5 7/8	....	Shell Union (No par)	8 7/8	8 7/8	7 7/8	8 1/4	– 5/8
2 1/32	1 1/32	6	Steaua Romana	2 7/32	2 1/32	1 9/32	1 9/32	– 1/16
3 23/32	2 5/32	15	Trinidad Leasehold	3 23/32	3 23/32	3 5/16	3 13/32	– 5/16
5/16	3/16	....	Untd. Brit. of Trinidad (6s. 8d.)	5/16	5/16	1/4	9/32	– 1/32
2 5/16	1 1/32	12½	Venezuelan Oil Concessions	1 27/32	1 27/32	1 17/32	1 9/16	– 9/32

Nominal value of shares £1 unless otherwise stated by bracketed figures. * Denotes Tax-free dividend. ‖ 10 per cent dividend tax free plus 4 per cent bonus less tax.

manian industry, Sir Albert urged the Roumanian government to lose no further time in arranging for construction of the Baicoi-Constanza pipeline, to enable Roumanian products to compete satisfactorily in the world's markets.

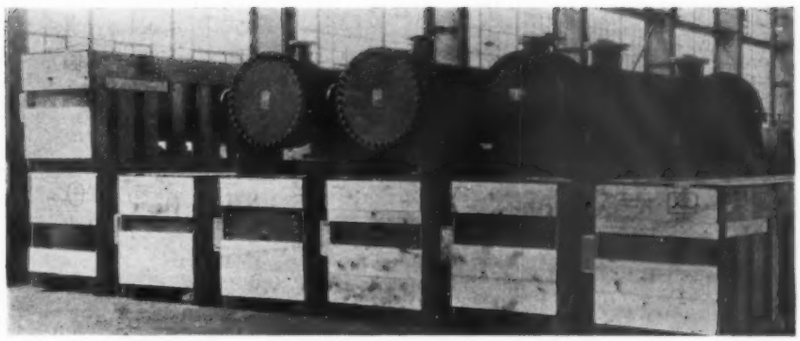
SHAREHOLDERS of Kern River Oilfields of California were informed at the recent annual meeting that negotiations had been in progress to dispose of the company's interests in Roumania, but that the prices offered had been inadequate. The negotiations were undertaken by the Kern directors pursuant to the decision, announced two years ago, not to put further large sums into the Roumanian industry. The company holds a controlling interest in Kern, Romana, Limited. Discussing the Roumanian position, Mr. William Ivey, the chairman of Kern River, stated that conditions had improved, and economies had now been effected which would enable the directors to continue operations in that country. Output reduction in all the company's principal fields was revealed in the report presented to the meeting, the total for the company and its subsidiaries being 879,159 bbl. for the year to May 31, 1933, compared with 1,158,726 bbl. in the preceding year. Profits, excluding Roumania, amounted to £28,111, a reduction of £35,220. Loss incurred by the Roumanian subsidiary was reduced from £24,382 to £10,-068 last year. Roumanian interests stand in the books of the company at a total cost of £347,171, against which there is a reserve of £50,000.

ALEC H. DAY

New York: December

SECURITY markets displayed no definite trend in either direction during December, apparently reflecting the hesitant attitude in the financial district and a disposition to await indications of the new year, particularly as pertaining to the attitude and probable action of Congress and the further steps contemplated by the Administration in its financial and economic program. As measured by one of the important stock market indices, the stock market closed the year slightly better than 50 percent above the opening level. The only group of issues which did not participate in this trend were the utility stocks which recorded an over-all decline of about 14 percent. This, of course, reflected the adverse factors affecting this particular group alone and arising from the universal agitation for rate reductions, the increased tax burden which has been placed upon this industry, and the increasing momentum in various parts of the country of the movement toward municipal ownership of electric light and power plants.

The oil industry was handicapped during the first half of the year by over-production and low prices but recorded substantial improvement beginning in the third quarter when the authority and cooperation of the government under the NRA code resulted in a sharp curtailment of crude oil output and a consequent rise in oil prices. The oil stocks as a group participated substantially in the general recovery impulse and closed the year at an average level about 75 percent above their level of last January.



Foster Wheeler heat exchangers crated and ready for shipment to Iraq where they will be used to cool the 45 Diesel engines in the pump stations along the line. These heat exchangers make use of oil from the pipeline to cool water which in turn cools the engines which drive the pumps.

TIDE WATER ASSOCIATED OIL COMPANY resumed dividends on its $6 preferred stock with a payment of $1.50 per share on December 23 which was designated as applying on the unpaid quarterly dividend due on April 1, 1933, the first dividend date on which payments were omitted. The company owns approximately 98 percent of the outstanding common stocks of Associated Oil Company and Tide Water Oil Company and consequently received about $3,268,000 when these two subsidiaries recently paid dividends of 50 cents per share and $1 per share respectively. The dividend declared on the 6 per cent preferred stock will absorb about $1,000,000 of this amount, leaving about $2,200,000 unexpended, an amount equivalent to slightly more than $3 per share on the preferred stock, compared with $4.50 per share in dividend arrearage existing at the present time. Further preferred payments are expected this year and the general outlook for the industry probably justifies the expectation that the arrearage will be entirely cleared up and the way paved for resumption of common dividends.

IT IS ANTICIPATED that subject to possible year end adjustments, Atlantic Refining Company will be able to report for 1933 a net profit of a little less than $8,000,000, or about $3 per share, compared with a net profit of $3,918,000 or $1.45 per share for the full year 1932. This favorable comparison was foreshadowed by the very favorable third quarter of last year when a net profit of $5,710,000 or $2.12 a share was reported, following a rather unsatisfactory first six months. Although marketing conditions in the final quarter were relatively favorable, operating costs had been steadily mounting during the third quarter under the NRA and a fourth quarter profit of approximately $1.25 a share may thus be regarded as a very creditable showing in view of the normal seasonal decline from third quarter to fourth quarter.

PHILLIPS PETROLEUM ushered in the new year with declaration of a dividend of 25 cents a share payable February 15 to stock of record January 12. The last previous dividend was 50 cents a share disbursed on January 2, 1931.

STOCKHOLDERS of Humble Oil and Refining Company, 70 percent owned by Standard Oil Company (New Jersey), approved at a special meeting on December 19 the proposed change of par value of the company's stock from $25 per share to no par and an increase in the number of shares from 3,000,000 to 9,000,000. The change involves no increase in the stated dollar capitalization of the company, the large surplus of $117,590,000 as of the close of 1932 remaining undisturbed.

This is the first important change in the outstanding stock of the company since 1926 when the authorized capital was increased to $75,000,000, or 3,000,000 shares, and the stockholders received subscription rights at par. No indication as to probable dividend basis on the new stock which was issued on a three for one basis has been officially given, but in view of the general improvement in the situation and outlook for the industry it is not improbable that the total return to stockholders will be increased when the next dividend is paid on or about April 1. It is expected that the earnings reported for 1933 will be somewhat if not substantially in excess of the 1932 net profit of $14,897,000 which was equivalent to $5.01 per share on the old $25 par stock.

IN ORDER to take care of the year end stock dividend of 9 percent which Sun Oil Company paid to its common stockholders on December 15, an additional listing on the New York Stock Exchange of 143,200 shares of common stock was secured. The stock is being charged on the books against surplus at the rate of $33.88 a share. The listing statement reveals that during the first nine months of 1933, $3,000,000 was expended out of current earnings to increase and improve the company's refineries. During the previous year, 1932, new investments totalled approximately $5,200,000 including improvements to the refineries at Marcus Hook, Pennsylvania, and Toledo, Ohio, and pipelines in the oil fields and in East Texas.

New York Stock Prices

1933 High	1933 Low	Current Div. $ per Annum	Stock (Par Value $)	November 20–December 23 Sales (Shares)	First	High	Low	Last	Net Change[1]
47⅝	18½	2.00	Amerada (No)	36,600	46¼	46¾	40	42½	−3⅛
32½	12⅜	1.00	Atlantic Refining (25)	115,000	32	32⅜	28	28⅝	−3⅛
11	3	....	Barnsdall (5)	112,700	9⅜	10⅛	7¾	7⅞	−1¾
4	¼	....	Colon Oil (No)	7,900	1⅞	1⅞	1	1⅛	− ⅝
15¾	5	....	Consol Oil (No)	312,000	12⅝	12⅞	9¾	10⅝	−2
19⅝	4⅞	....	Continental Oil (5)	205,600	18½	19¼	16½	17⅝	−1⅛
12	2¼	....	Creole Petroleum (5)	79,100	11¾	12	9¼	10⅜	−1⅜
62	24	....	Gulf Oil Corp. (25)	35,100	58½	60⅞	53¼	55	−3¼
105½	40	2.00	Humble Oil & Ref. (25)	32,900	95¾	105½	92	100¾	+5¼
15⅞	6½	0.50	Imperial Oil, Ltd. (No)	65,300	15⅛	15¾	12½	12¾	−2⅝
23½	8⅞	§1.12	International Petr. (No)	74,500	22⅛	23⅜	19¼	19½	−2¾
16	3¾	....	Mid-Continent (No)	63,800	14	14¾	11	11⅜	−2
17⅜	4¾	....	Ohio Oil (No)	139,800	15¾	16⅝	12¾	13¼	−2¾
18¾	4¾	1.00	Phillips Petr. (No)	132,900	17⅜	18	14¼	15½	−1¾
15⅜	2½	....	Pure Oil (25)	79,300	12⅝	13⅜	10½	10⅞	−2⅛
39¾	17⅝	†6%	Royal Dutch (N. Y.) (13⅓)	6,100	38⅛	39⅝	35⅞	35⅞	−2½
43⅜	15	‡0.60	Seaboard Oil (No)	40,000	36½	38½	28½	29½	−7
11⅝	4	....	Shell Union (No)	63,800	9⅛	9⅜	7	8	− ⅞
12⅜	4⅞	0.25	Simms Petr. (10)	7,700	10⅛	10½	9¼	9¼	−1
9⅞	3	....	Skelly Oil (25)	10,400	9¼	9¼	8¼	8½	− ⅝
17	6	1.00	Socony-Vacuum (25)	616,000	16½	17	14¼	16	− ⅜
45	19½	1.00	Standard Oil of Calif. (No)	146,500	44	44¾	38½	39⅞	−4⅛
34	17	1.00	Standard Oil, Ind. (25)	145,500	31⅞	33⅛	31⅞	32½	+ ½
39⅞	12¾	2.00	Standard Oil, Kansas (25)	8,600	35	39⅞	34¾	37¾	+1¾
19¼	8⅜	1.00	Standard Oil, Ky. (10)	14,500	16¼	16⅜	13⅝	14¾	−1½
47½	22¾	1.00	Standard Oil, N. J. (25)	262,400	46⅞	47⅜	43	45½	−1⅛
59	35	*1.00	Sun Oil (No)	4,500	55	59	49	51½	−2½
30⅛	10¾	1.00	Texas Corp. (25)	130,500	26¾	27⅝	24¼	24⅜	−2⅝
11¾	3⅛	....	Tide Water Assoc. (No)	132,300	10¾	10⅞	8¾	9	−1⅝
23⅜	8½	1.00	Union Oil of Calif. (25)	60,600	20⅛	21⅛	18½	19	−1⅜
1½	⅛	....	Venezuelan Petr. (5)	12,500	⅞	1 1/16	½	⅝	− ¼

[1] Since close of last month's table. † Paid for 1932—no regular rate.
‡ Also 10c extra this year.
* Also paid 9% in stock for 1933.
§ Payable in Canadian funds.

COLON OIL CORPORATION, an important Venezuelan subsidiary of the Royal Dutch-Shell interests, reported for the quarter ended September 30, 1933, a net loss of $428,318, compared with a net loss of $341,038 in the same quarter of 1932. This loss was after deduction for intangible drilling expense, interest, amortization, depletion and provision for depreciation and retirement of general facilities. The net loss for the nine months ended September 30 last was $1,068,613 compared with a net loss of $1,091,883 in the same period of 1932.

THAT CONSOLIDATED Oil Corporation has been improving its general position seems to be clearly indicated by the report of Sinclair Refining Company, its marketing subsidiary, that for the first eight months of 1933 it enjoyed an increased sale of all products of 300,000,000 gal. over the corresponding period of 1932. An important factor in this gain was said to be the company's increased lubricating oil sales.

Consolidated Oil Corporation is not required by its listing agreement with the New York Stock Exchange to publish financial reports more than once a year and no official interim information as to results last year is available. There is little doubt, however, that in the first half of that year, as was the case with most of the oil units, a net loss was sustained. The improvement which set in during the summer and culminated in the latter part of the third quarter unquestionably resulted in a profit to Consolidated and may perhaps have more than offset the loss of the first half year so as to yield a net profit for 1933 as a whole. A strong financial position has been maintained and Consolidated is thus in a position to resume common dividends whenever earnings and prospects appear to justify such action.

C. C. BAILEY

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Dollar Depreciation Affects British Price Structure

RECENT depreciation of the United States dollar to a considerable discount in relation to sterling has introduced a fresh complication into the British price structure. The increase of 1d. per gallon in motor spirit prices, announced at the beginning of November by the national distributing group, was made before the discount on United States currency developed. This advance, which brought the price of first grade spirit up to 1s. 6d. per gallon, was obviously a tentative adjustment, and the general expectation then was that continued success in applying the business code to the United States industry would be followed by a further increase in British selling prices. On the basis of the exchange ruling at the time, the advance was overdue, but the subsequent fall in the value of the dollar has changed the situation by reducing the sterling equivalent of Gulf prices. Export prices in the United States, in fact, have not been adjusted upwards to a sufficient extent to offset the dollar's latest decline, with the result that the sterling cost of imports of oil into Britain is now lower than that recently ruling. This, for the moment, has thrown the price level slightly out of gear. It not only increases the possibilities of profit on import business by established British distributors, but also increases the vulnerability of the market to competition by independent distributing concerns, which can now obtain supplies at a cheaper sterling rate and are therefore better prepared to cut into the market at any given price level established in Britain. In addition therefore, to internal conditions in the United States, the national distributing companies in the British market have to consider exchange possibilities in framing their price policy. In view of the uncertainties which the exchange position presents, caution is likely to dominate their outlook, and the prospect of further substantial rises in British selling prices in the immediate future is correspondingly reduced.

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Value of U. S. Crude Production

THE VALUE of crude oil produced in the United States for the first nine months of this year is estimated at $402,147,480.00 (by dividing the country in East, Mid-Continent, and California) and working out the price for each section for two periods: (1) the first 8 months, before the code and (2) September, after the code. Adding these six results give the above estimate.

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Leach Bulletin

C. H. LEACH COMPANY have just issued a bulletin describing the Leach High Pressure Fracto Condenser. This condenser is designed for installation on cracking coils in the vapor line between the vaporizer and the bubble tower. The bulletin also discusses cleaning, retubing, maintenance problems and heat transfer. Finally, the last section is devoted to the development of the Leach designs.